

Zoological Record

Vol. 94, Sect. 15, 1957

PISCES

COMPILED BY

G. PALMER (Recent) and
E. I. WHITE, D.Sc., F.R.S. (Fossil)

LONDON

PUBLISHED BY

THE ZOOLOGICAL SOCIETY OF LONDON

PRICE EIGHT SHILLINGS AND SIXPENCE

March, 1959

SEPARATE SECTIONS OF THE ZOOLOGICAL RECORD

In addition to the complete bound volume, the separate Sections may be obtained singly, bound in printed paper covers.

The following are the Sections and their prices, viz.:—

							<i>s.</i>	<i>d.</i>
1. Comprehensive Zoology	..	..	..	..	..	..	3	0
2. Protozoa	..	..	..	..	..	..	10	0
3. Porifera	..	..	..	..	..	..	2	0
4. Coelenterata	..	..	..	..	..	..	4	0
5. Echinoderma	..	..	..	..	..	..	4	0
6. Vermes	..	..	..	..	..	..	10	0
7. Brachiopoda	..	..	..	..	..	..	4	0
8. Bryozoa	..	..	..	..	..	..	2	6
9. Mollusca	..	..	..	..	..	..	10	0
10. Crustacea	..	..	..	..	..	..	6	6
11. Trilobita	..	..	..	..	..	..	5	0
12. Arachnida	..	..	..	..	..	..	10	0
*13. Insecta	..	..	..	..	..	..	50	0
14. Protochordata	..	..	..	..	..	..	2	0
15. Pisces	..	..	..	..	..	..	8	6
16A. Amphibia	..	..	..	..	..	..	6	0
16B. Reptilia	..	..	..	..	..	..	7	6
17. Aves	..	..	..	..	..	..	10	0
18. Mammalia	..	..	..	..	..	..	10	0
19. List of New Genera and Subgenera	..	..	..	..	..	..	4	0

* Obtainable only from the Commonwealth Institute of Entomology, 56, Queen's Gate, London, S.W.7.

15. PISCES

COMPILED BY

G. PALMER (Recent) and

E. I. WHITE, D.Sc., F.R.S. (Fossil)

CONTENTS

	PAGE
I. TITLES	1
II. SUBJECT INDEX	48
III. SYSTEMATIC INDEX	59

I.—TITLES.

The year of publication of a title is omitted from the reference where it is the same as the volume year of the 'Record' namely 1957.

Direction 30. Determination of the gender to be attributed to the names of fifty-seven genera of fishes, cyclostomes, reptiles and amphibia placed on the *Official List of Generic Names in Zoology* in the period up to the end of 1936. Opin. int. Comm. zool. Nom. 1 C 1955 : 287–298.

Direction 33. Addition to the *Official List of Generic Names in Zoology* of the generic name *Pleuronectes* Linnaeus, 1758 (Class Actinopterygii) (Direction supplementary to Opinion 68). Opin. int. Comm. zool. Nom. 1 C 1956 : 329–340.

Direction 34. Addition to the *Official List of Generic Names in Zoology* of the generic name *Sparus* Linnaeus, 1758 (Class Actinopterygii) (Direction supplementary to Opinion 69). Opin. int. Comm. zool. Nom. 1 C 1956 : 341–352.

© Zoological Society of London, 1959.

VOL. 94

Direction 56. Completion and in certain cases correction of entries relating to the names of genera belonging to the Classes Pisces, Amphibia and Reptilia made in the *Official List of Generic Names in Zoology* in the period up to the end of 1936. Opin. int. Comm. zool. Nom. 1 D 1956 : 337–364.

Direction 57. Addition to the *Official List of Specific Names in Zoology* (a) of the specific names of forty-seven species belonging to the Classes Cyclostomata, Pisces, Amphibia and Reptilia, each of which is the type species of a genus, the name of which was placed on the *Official List of Generic Names in Zoology* in the period up to the end of 1936 and (b) of the specific name of one species of the Class Amphibia which is currently treated as a senior subjective synonym of the name of such a species. Opin. int. Comm. zool. Nom. 1 D 1956 : 365–388.

Direction 69. Validation under the Plenary Powers of the generic name *Osmerus* as a subgeneric status as from Linnaeus, 1758 (Class Pisces) (validation

of an error in the Ruling given in *Opinion* 77). *Opin. int. Comm. zool. Nom.* 1 E : 137-150.

Opinion 375. Designation under the plenary powers of a type species in harmony with current usage for the genus *Heterandria* Agassiz (J.L.R.), 1853 (Class Osteichthyes). *Opin. int. Comm. zool. Nom.* 11 1955 : 379-390.

Opinion 438. Validation under the Plenary Powers of the generic name *Rhinopteraspis* Jaekel, 1919 (Class Ostracodermi). *Opin. int. Comm. zool. Nom.* 15 : 41-50.

Opinion 461. Addition to the *Official List of Generic Names in Zoology* of the generic name *Cubiceps* Lowe (R.T.), 1843, a name published conditionally for a species described simultaneously in the genus *Seriola* Cuvier (G.L.C.F.D.), [1816] (Class Pisces) (*Opinion* supplementary to *Declaration* 30). *Opin. int. Comm. zool. Nom.* 15 : 475-484.

Opinion 485. Determination of the relative priority to be assigned to the names *Cheirodon axelrodi* Schultz (L.P.) and *Hypheosobrycon cardinalis* Myers (G.S.) and Weitzman (S.H.) (Class Pisces) both being names published in February, 1956. *Opin. int. Comm. zool. Nom.* 17 : 87-104.

Opinion 487. Validation under the Plenary Powers of the generic names *Gempylus* Cuvier, 1829 (Class Pisces) and *Acinaces* Gerstaecker, 1858 (Class Insecta, Order Coleoptera). *Opin. int. Comm. zool. Nom.* 17 : 119-142.

Anon (1). Mistaken journey. *Angling Times* No. 207 : 1.

Anon (2). Mystery of the Red Tide. *Sea Frontiers* 3 : 21-31 6 figs.

(Abakumov, V. A.). [The mode of life of the Baltic migratory lamprey]. *Ichth. Probl., Moscow* 6 1956 : 122-128. [In Russian.]

(Abdullaev, M. A.). [Fishes of Kuyumazar water reservoir]. *Ichth. Probl., Moscow* 8 : 107-115 4 graphs. [In Russian].

Abe, T. (1). New, rare or uncommon fishes from Japanese waters. VI. Notes on the rare fishes of the family Histiopoteridae. *Jap. J. Ichthyol.* 6 : 35-40 and 71-74 1 fig.

Abe, T. (2). Studies on the fishes whose young are believed to be carried in large numbers by the "Kuro-shiwo." *Rec. oceanogr. Wks. Japan (Spl. No.)* : 93-96.

Abe, T. (3). Notes on fishes from the stomachs of whales taken in the Antarctic. I. *Xenocyttus nemotoi*, a new genus and new species of Zeomorph fish of the subfamily Oreosominae Goode and Bean, 1895. *Sci. Rep. Whale Res. Inst. Tokyo* No. 12 : 225-233 2 pls.

Abe, T. *see* Tomiyama, I.

Abolins, L. & Abolins-Krogis, A. Studies on skin carotenoids of *Orenilabrus pavo* C.V. *Publ. Staz. zool. Napoli* 29 : 389-406 4 figs.

Abolins-Krogis, A. *see* Abolins, L.

(Abrosof, V. N. & Agapov, I. D.). [On the autoregulation of the number of smelt in Zhizhitsk lake]. *Ichth. Probl., Moscow* 8 : 160-178 fig. [In Russian.]

Acolat, L. Recherches relatives à la réaction du coeur isolé du Brochet (*Esox lucius* L.) au passage du courant galvanique. *Ann. Sci. Univ. Besançon* (2) *Zool. & Phys.* No. 4 1955 : 9-16 6 figs.

Acolat, L. & Muller, T. Essais en vue de provoquer artificiellement des formations pathologiques au niveau des téguments chez quelques Poissons d'eau douce. *Ann. Sci. Univ. Besançon* (2) *Zool. & Phys.* No. 5 1956 : 3-12.

Adam, H. Der III Ventrikel und die mikroskopische Struktur seiner Wände bei *Lampetra* (*Petromyzon*) *fluviatilis* L. und *Myxine glutinosa* L., nebst einigen Bemerkungen über des Infundibularorgan von *Branchiostoma* (*Amphioxus*) *lanceolatum* Pal. *Progress in Neurobiology*, London, N.Y. 1956 : 146-158 6 figs.

Aitzelius, B. A. & Olsson, R. The fine structure of the subcommissural cells and of Reissner's fibre in *Myxine*. *Z. Zellforsch.* 46 : 672-685.

Agapov, I. D. *see* Abrosof, V. N.

Ahmad, N. Mortality of fish during transport and cultural operation: Causes and prevention. *Pakistan J. Sci.* 6 1954 : 102-106.

Alabaster, J. G., Herbert, D. W. M. & Hemens, J. The survival of the rainbow trout (*Salmo gairdnerii* Richardson) and perch (*Perca fluviatilis* L.) at various concentrations of dissolved oxygen and carbon dioxide. *Ann. appl. Biol.* **45** : 177-188 6 figs.

Albuquerque, R. M. Peixes de Portugal e ilhas adjacentes chaves para a sua determinação. *Portug. acta biol.* **5B** 1956 : i-xvi, 1-1167 445 figs.

Alderdice, D. F. & Brett, J. R. Some effects of Kraft mill effluent on young Pacific salmon. *J. Fish. Res. Bd. Can.*, **14** : 783-795.

(Aleev, Y. G.) (1). [The role played by low temperatures in the stimulation of trophoplasmatic growth of oocytes in fish]. *C.R. Acad. Sci. URSS* **110** 1956 : 491-493 Pl. [In Russian.]

(Aleev, Y. G.) (2). [On the functional importance of lateral (horizontal) body orientation in Pleuronectiformes]. *C.R. Acad. Sci. URSS* **110** 1956 : 707-709 3 figs. [In Russian.]

(Aleev, Y. G.) (3). [Some principles of fish growth.] *Ichth. Probl., Moscow* **6** 1956 : 75-95. [In Russian.]

(Aleev, Y. G.) (4). [The systematic position of *Trachurus* in the Black Sea.] *Ichth. Probl., Moscow* **7** 1956 : 174-184 2 figs. [In Russian.]

(Aleev, Y. G.) (5). [Function of fins and their characteristics.] *Ichth. Probl., Moscow* **8** : 55-76 9 figs. [In Russian.]

(Aleev, Y. G.) (6). [On ten species of *Trachurus* in the U.S.S.R. seas]. *Trav. Sta. biol. Sebastopol* **9** : 167-242 figs. pls. [In Russian.]

(Aleev, Y. G.) (7). [On the evolution of the pelagic Carangidae (Carangidae, Perciformes).] *Trav. Sta. biol. Sebastopol* **9** : 274-281 4 figs. [In Russian.]

Alexander, K. M. A comparative study of the total protein content in the skeletal muscles of some representative vertebrates. *J. zool. Soc. India* **8** 1956 : 149-156.

Alfert, M. Chemical differentiation of nuclear proteins during spermatogenesis in the salmon. *J. biophys. & biochem. Cytol.* **2** 1956 : 107-114 3 pls.

Allison, L. N. Variation in strength of pyridylmercuric acetate technical and its effect on rainbow trout. *Prog. Fish. Cult.* **19** : 108-111 2 figs.

Alm, G. [The yield of the pike and perch fisheries along the Baltic coasts of Sweden during the years 1914-1955.] *Rep. Inst. Freshwater Res. Drottningholm, No. 38*, : 5-69. 24 figs. [English Summary.]

Altamirans, M. Electrical properties of the innervated membrane of the electrophax of electric eel. *J. cell. comp. Physiol.* **46** 1955 : 249-277 9 figs.

Alvariño, A. (1). Estudio del zooplancton recogido en la campaña "Vendaval", en Terranova, Marzo, abril y mayo de 1953. *Bol. Inst. esp. Oceanogr. No. 76* 1956 : 1-28.

Alvariño, A. (2). Zooplancton de Terranova (Febrero, marzo y junio de 1955). *Bol. Inst. esp. Oceanogr. No. 77* 1956 : 1-18.

Alvariño, A. (3). Estudio del zooplancton del Mediterraneo Occidental. *Bol. Inst. esp. Oceanogr. No. 81* : 1-26 9 figs.

Alvariño, A. (4). Zooplancton del Atlantico Iberico. *Bol. Inst. esp. Oceanogr. No. 82* : 1-51 7 figs.

Alverson, D. L. & Chatwin, B. M. Results from tagging experiments on a spawning stock of petrale sole, *Eopsetta jordani* (Lockington). *J. Fish. Res. Bd. Can.* **14** : 953-974 3 figs.

Alverson, D. L. *see* Welander, A. D.

Alverson, F. G. & Shimada, B. M. A study of the Eastern Pacific Fishery for tuna baitfishes, with particular reference to the anchoveta (*Cetengraulis mysticetus*). *Bull. Inter-Amer. Tuna Comm.* **2** : 25-79.

Aminul Huq, A. K. M. *see* Bhatti, H. K.

(Amosov, V. A.) [Fundamental indicators for external features of fish.] *Ichth. Probl., Moscow* **6** 1956 : 55-74 10 figs. [In Russian.]

Anadón, E. Anatomia e histologia de las placas luminosas caudales de *Lampadena nitida* (Taaning). *Bol. Soc. esp. Hist. nat. Secc. Biol.* **55** : 129-144 6 pls.

Ancona, U. D'. (1). Inversions spontanées et expérimentelles dans les gonades des téléostéens. *Année Biol.* (3) **32** 1956 : 89-99.

- Ancona, U. d' (2).** The gonad differentiation in lower teleostomes. *Int. Congr. Zool.* 14 1953 (1956) : 237-239.
- Ancona, U. d' (3).** Morphogénèse et différenciation sexuelle chez les poissons téléostéens. *Bull. Soc. zool. Fr.* 81 : 219-229 2 pls.
- Ancona, U. d' (4).** La base génétique et l'influence du milieu sur la différenciation sexuelle de l'Anguille. *C.R. Acad. Sci. Paris* 245 : 23-264.
- Ancona, U. d' (5).** Nuove ricerche sperimentali sull'azione di ormoni steroidei sulla gonade dell'anguilla. *Pubbl. Staz. zool. Napoli* 29 : 307-322 5 pls. [English summary.]
- Andréka, F.** *see* Gyurko, S.
- (Andriyashev, A. P.).** [The role of sense organs in searching for food by fish.] *Trud. Sovesh. Ikhtiol. Komm.* 6 1954 (1955) : 135-142. [In Russian.]
- (Anpilova, V. I.).** [On the taxonomic position of *Coregonus sardinella baunti* Muchomedijarov, 1948.] *C.R. Acad. Sci. URSS* 111 1956 : 898-900 fig. [In Russian.]
- Aoyagi, H.** One new species of the Pomacentridae, Pisces, from the Palau Islands. *Zool. Mag., Tokyo* 53, 1941 : 180-181 1 fig.
- Aoyama, T.** [On the regeneration of the teleost scale, with special reference to the yellow sea bream, *Tauius tumifrons*.] *Bull. Jap. Soc. Sci. Fish.* 22 : 679-684 4 figs. [English summary.]
- Arachelian, I.** *see* Busnita, T.
- Aramburu, A. S. A. de (1).** Nota sobre *Cyrtrocharax squamosus* (Eigenmann y Kennedy). (Pisces: Characoides). *Notas Mus. Univ. nac. La Plata, Zool.* 19 : 87-92.
- Aramburu, A. S. A. de. (2).** Una nueva cita de *Mola mola* (Linné) para el atlántico sur (Pisces: Plectognathi). *Notas Mus. Univ. nac. La Plata, Zool.* 19 93-99 5 figs.
- Aramburu, A. S. A. de. (3).** *Porotergus ellisi* una nueva especie de gimnotido de la Argentina (Pisces: Gymnotoidei). *Notas Mus. Univ. nac. La Plata, Zool.* 19 : 153-159 4 figs.
- Aramburu, A. S. A. de. (4).** Nota sobre *Auchenipterus nuchalis* (Spix) (Pisces: Siluroidei). *Notas Mus. Univ. nac. La Plata Zool.* 19 : 171-176 3 figs.
- Arbocco, G.** Contributo alla conoscenza dei pesci d'acqua dolce della Liguria. 1. Le trotte del Rio Baracca. *Ann. Mus. Civico Stor. nat. Genova* 68 1955 : 143-148 pls. iii and iv.
- Arnold, D. C.** Notes on the fishes of the family Carapidae (Fierasferidae) in the Museum of the Institut Océanographique, Monaco. *Bull. Inst. océanogr. Monaco* No. 1084 1956 : 1-5.
- Arnoult, J.** Sur quelques poissons rare et peu connus des eaux douces de France. *Bull. Mus. Hist. nat. Paris* (2) 29 : 464-466.
- Aronson, L. R.** *see* Brown, M. E.
- Arora, H. L. & Sperry, R. W.** Myotopic respecification of regenerated nerve fibres in cichlid fishes. *J. Embryol. Exp. Morph.* 5 : 256-263 2 figs.
- Arvy, L., Fontaine, M. & Gabe, M.** Fonction thyroïdienne et complexe hypothalamo-hypophysaire chez la truite. *C.R. Soc. Biol. Paris* 150 1956 : 625-627.
- Ashby, K. R. (1).** The early development of the reproductive system of the brown trout *Salmo trutta* L. *Int. Congr. Zool.* 14 1953 (1956) : 239-242.
- Ashby, K. R. (2).** The effect of steroid hormones on the brown trout (*Salmo trutta* L.) during the period of gonadal differentiation. *J. Embryol. Exp. Morph.* 5 : 225-249 2 pl. 4 figs.
- (Aslanova, N. E.).** [Behaviour of pelagic fish in Black Sea during the winter.] *Trud. Sovesh. Ikhtiol. Komm.* 5 1953 (1955) : 144-153 8 figs. [In Russian.]
- Atz, E. H. and Pickford, G. E.** Failure to elicit the Galli-Mainini reaction in *Rana pipiens* with spawning reflex fractions and other teleostean pituitary preparations, and observations on the response to mammalian gonadotrophins. *Zoologica, N.Y.* 39 1954 : 117-122.
- Atz, J. W. & Coates, C. W.** A remarkable instance of parallelism among Teleost fishes. *Copeia* 1957 : 302-303.
- Austin, P.** Notes on the growth of Irish pike. *Fishing Gazette* 139 : 420.
- Avnimelech, M.** Découverte de *Stratodus* (Teleostei: Dercetidae) dans le Sénouien supérieur d'Israël. *C.R. Soc. géol. Fr.* 1957 : 23-24.

Avondhu'. Notes on some large Irish salmon and brown trout. *Salm-Trout Mag.* No. 150 : 156-161.

Axelrod, H. R. & Vorderwinkler, W. Encyclopedia of tropical fishes, with special emphasis on techniques of breeding. New York (Sterling Publ. Co.) pp. 733, text illust. (some col.).

Azazaki, M. [Biological studies on a dragonet, *Synchiropus altivelis* (Temminck et Schlegel).] *Jap. J. Ichthyol.* 5 : 146-152 2 figs. [English summary.]

(Azbelev, V. V. & Lagunov, I. I.). [Some data regarding the migrations of semga salmon.] *Ichth. Probl.*, Moscow 6 1956 : 113-120. [In Russian.]

(Baburina, E. A.). [Peculiarities in structure and function of the fish eye.] *Trud. Sovesh. Ikhtiol. Komm.* 5 1953 [1955] : 90-103 12 figs. [In Russian.]

(Baburina, E. A. & Buznikov, G. A.). [The hatching glands of Kuban embryos of *Vimba vimba carinata* as a source of hyaluronidase and of the hatching enzyme.] *C.R. Acad. Sci. URSS* 113 : 1387-1390 2 figs. [In Russian.]

Backus, R. H. (1). The fishes of Labrador. *Bull. Amer. Mus. nat. Hist.* 113 : 273-332 2 pls. 2 figs.

Backus, R. H. (2). Notes on Western North Atlantic sharks. *Copeia* 1957 : 246-248.

Backus, R. H. see Gordon, M. S.

Backus, R. H. see Johnson, H. R.

Bader, H. Erfahrungen mit der Netzschmerle *Botia lohachata* Chaudhuri. *Aquar. Terrar. Z.* 10 : 203-205.

Baerends, G. P. see Brown, M. E.

Bagenal, T. B. (1). The breeding and fecundity of the long rough dab *Hippoglossoides platessoides* (Fabr.) and the associated cycle in condition. *J. Mar. biol. Ass. U.K.* 36 : 339-375 10 figs.

Bagenal, T. B. (2). Annual variations in fish fecundity. *J. Mar. biol. Ass. U.K.* 36 : 377-382.

Bailey, R. M. *Cichlaurus* versus *Cichlasoma* as the name for a genus of perciform fishes. *Copeia* 1957 : 303-304.

Bailey, W. B. see Leim, A. H.

Baird, D. A *Physonemus* spine from the Pennsylvanian of West Virginia. *J. Paleont.* 31 : 1010-1018, figs.

Baker, H. see Nigrelli, R. F.

Bal, D. V. see Marathe, V. B.

(Balabai, P. P.) (1). [On the phylogeny of the Agnatha.] *Zool. Zh.*, Moscow 35 1956 : 874-890 12 figs. [Russian with English summary.]

[Balabai, P. P.] (2). [K voprosu o vertika'nom rasprostraneni pteraspid podol'skogho Old-Reda.]. *Geol. Sbornik* 4 : 305-309 2 t-figs.

Balabai, P. P. & Opalatenko, L. K. On the fauna of the Old Red and the Podalian bed. *Rep. Acad. Sci. Ukr.* 1957 : 406-409 3 figs. [English summary.]

Balon, E. (1). The development of scales in *Rutilus rutilus* (L.) and *Leucaspis delineatus* (Heck.). *Polisk. Arch. Hydrobiol.* 3 1956 : 175-187 17 figs. [English summary.]

Balon, E. (2). Zur ichthyofauna des Orava-Flusses. *Zool. Listy* 5 1956 : 325-337 1 fig. [German summary.]

Bănărescu, P. (1). Variation du torus longitudinal du cerveau chez les poissons téléostéens. *Comun. Acad. Republ. Pop. rom.* 6 1956 : 893-899 6 figs. [French summary.]

Bănărescu, P. (2). Distribution et rôle biologique des Gobies dans le complexe lagunaire Razelm. *Bul. Inst. Cercet. Pisc. Roman.* 16 No. 2 : 36-45. [French summary.]

Bănărescu, P. & Nalbant, T. Eidonomische und taxonomische Untersuchungen an *Cobitis elongata* (Pisces, Cobitidae). *Senckenbergiana biol.* 38 : 283-294 7 figs.

Baraduc, M. M. Influence de la thyroxine sur les échanges de l'ion chlore de la Triute arc-en-ciel (*Salmo gairdnerii* Rich.). *C.R. Soc. Biol. Paris* 151 : 303-305.

(Baranenkova, A. S.). [Data on the distribution of sea perches of the genus *Sebastes*.] *C.R. Acad. Sci. URSS* 113 : 468-471 3 figs. [In Russian.]

(Barannikova, I. A.). [Completion of spawning condition of autumn migrating female and male winter sturgeon after exclusion from freshwater during the spawning migration.] *C.R. Acad. Sci. URSS N.S.* 99 1954 : 641-644 2 figs. [In Russian.]

Bardach, J. E. The sensitivity of the goldfish (*Carassius auratus* L.) to point heat stimulation. *Amer. Nat.* **90** 1956 : 309-317 1 fig.

Bardach, J. E. & Bjorklund, R. G. The temperature sensitivity of some American freshwater fishes. *Amer. Nat.* **91** : 233-251 2 figs.

Barets, A. Les récepteurs intramusculaires des nageoires chez les sélaciens. *Arch. Anat. micr. Morph. exp.* **45** 1956 : 254-260 5 figs.

Barets, A. & Le Touzé, S. Identification dans le muscle latéral d'un Téléostéen (*Tinca tinca* L.) de deux systèmes moteurs, "lent" et "rapide". *C.R. Acad. Sci. Paris* **242** 1956 : 1230-1233 2 figs.

Barnoud, R. *see* Cordier, D.

Barr, L. M. *see* Prosser, C. L.

Barraclough, W. E. An abnormal long-nosed skate (*Raja rhina*) from British Columbia. *Rep. prov. Mus. Vict., B.C.* **1955** 1956 : D57-58 1 fig.

Barrett, J. H. *see* Bassindale, R.

Barrington, E. J. W. *see* Brown, M. E.

Barsukov, V. V. (1). Biological information on the increase of White Sea wolf fish (*Anarhichas lupus*). *Zool. Zh., Moscow* **32** 1953 : 1211-1216. [In Russian.]

Barsukov, V. V. (2). White Sea wolf fish (*Anarhichas lupus maris-albi* Barsukov). *Ichth. Probl., Moscow* No. 6 1956 : 129-135 1 pl. [In Russian.]

(Barsukov, V. V.) (3). [Distribution of *Anarhichus lupus*, *A. minor* and *A. latifrons* in Barents Sea.] *Ichth. Probl. Moscow* **8** : 28-50 13 figs. [In Russian.]

Baschieri-Salvadori, F. Spedizione subacquea Italiani nel Mar Rosso. *Ricerche zoologiche IX. Pomacentridi.* *Riv. Biol. colon.* **15** : 57-68 6 pls.

Bassindale, R. & Barrett, J. H. The Dale Fort marine fauna. *Proc. Bristol Nats' Soc.* **29** : 227-328 3 figs.

Bauch, G. Der Elbachs (*Salmo salar* L.), seine Biologie und wirtschaftliche Bedeutung. *Z. Fisch.* **6** : 241-250, 3 figs.

Bauchot, M.-L. & R. & Lubet, P. Étude de la fauna ichthyologique du Bassin d'Arcachon (Gironde). *Bull. Mus. Hist. nat. Paris* (2) **29** : 385-406 2 figs.

Bauchot, R. *see* Thomopoulos, A.

Bauer, K. & Schubert, P. *Proterorhinus marmoratus* Pallas (Gobiidae)—ein für die österreichische Fauna neuer Fisch. *Burgenländ. Heimat Bl.* **19** : 6-9 3 figs.

Baxter, E. W. The development of the intestinal blood system of lampreys (Petromyzonidae), with an account of the origin of vascular couples. *Proc. zool. Soc. Lond.* **129** : 371-396 3 pls., 13 figs.

(Beklemishev, K. V.). [The effect of sound waves in the sea on the vertical distribution of fishes and plankton]. *Adv. mod. Biol. Moscow* **41** 1956 : 90-96 3 figs. [In Russian.]

Belton, L. Étude sommaire d'un moulage naturel de la cavité crânienne d'un *Borcosomus* de l'Eotrias de Madagascar. *C.R. Acad. Sci. Paris* **245** : 549-551 1 fig.

Bemmel, A. C. V. van. Vissoorten der uit de Nederlandse fauna dreigen te verdwijnen. *Levende Nat.* **60** : 109-114.

Benl, G. (1). *Tetraodon leiurus brevirostris*, subsp. nova. Ein Nachtrag zu den Süßwasser-Kugelfischen in Datz 9 (6-8), 1956. *Aquar.-Terrar. Z.* **10** : 63-65, 4 text-figs.

Benl, G. (2). *Carinotetraodon chlupaty* nov. gen., nov. spec. ein Kugelfisch mit Kamm und Kiel. *Opusc. Zool. No. 5* : 1-4, 1 fig.

Ben-Tuvia, A. *see* Steinitz, H.

Bergman, P. *see* Welander, A. D.

Bergquist, H. On early cell migration processes in the embryonic brain. *J. Embryol. exp. Morph.* **4** 1956 : 152-160, 1 pl., 8 figs.

Bernard, F. Existence d'une région à épithélium gastrique dans la tube digestif de l'alevin de Gardon (*Leuciscus rutilus* L.). *C.R. Acad. Sci. Paris* **243** 1956 : 1161-1162.

Bernard, F. Recherches sur l'organogénèse de la bouche, des fentes branchiales et du coelome antérieur chez l'embryon de truite (*Salmo trutta* L.). *Trav. Lab. hydrobiol. Grenoble* **48** : 109-140 6 pls.

Berrill, N. J. The origin of Vertebrates. *Oxford (O.U.P.)* 1955 pp. viii + 257 31 text-figs.

(Bervald, E. A.). [Influence of industry on productivity of bream shoals in Aral sea.] Ichth. Probl., Moscow 7 1956 : 21-32 3 figs. [In Russian.]

Best, E. A. (1). Recent occurrences of the red brotula, *Brosomphycis marginata* (Ayres), in Californian waters. Calif. Fish Game 43 No. 1 : 97-98.

Best, E. A. (2). Tagged dover sole (*Microstomus pacificus*) at liberty six years. Calif. Fish Game 43 : 147.

Bhatti, H. K. Development of tail-fin in Teleostei. Proc. 4th Pakistan sci. Conf. pt. 3 1952 : 68-69. [Abstract.]

Bhatti, H. K. & Aminul Hug, A. K. M. On the structure of scales in Ophicephalidae. Proc. 4th Pakistan sci. Conf. pt. 3 1952 : 67-68. [Abstract.]

Bhatti, I. H. (1). On the history of barbels of a common siluroid fish, *Rita rita* Hamilton. Proc. 4th Pakistan sci. Conf. pt. 3 1952 : 65-66.

Bhatti, I. H. (2). On the cutaneous sense organs of a common siluroid fish, *Rita rita* Hamilton. Proc. 4th Pakistan sci. Conf. pt. 3 1952 : 66-67. [Abstract.]

Bhuiya, M. A. H. & Siddiqui, A. A. On the afferent branchial arteries in *Ophicephalus punctatus* Bloch. Proc. 4th Pakistan sci. Conf. pt. 3 1952 : 69. [Abstract.]

Bigelow, H. B. & Schroeder, W. C. A study of the sharks of the suborder Squaloidea. Bull. Mus. comp. Zool. Harv. 117 : 1-150 4 pls.

(Birman, I. B.) (1). [On the causes of one of the peculiarities in *Oncorhynchus gorbuscha* (Walb.) in the Sea of Japan.] Zool. Zh., Moscow 35 1956 : 1681-1684. [Russian with English summary.]

(Birman, I. B.) (2). [Local shoals of the autumn Keta Salmon in the Amur basin.] Ichth. Probl., Moscow 7 1956 : 158-173. [In Russian.]

(Birman, I. B.) (3). [The Kuro-Sio and the stock of *Oncorhynchus keta* infra sp. *autumnalis*.] Ichth. Probl. Moscow 8 : 3-7 2 figs. [In Russian.]

(Biryukov, N. P.) [Utilisation of growth-rate studies for distinguishing migrations and populations of Atlantic-Scandinavian herring.] Ichth. Probl. Moscow 6 1956 : 47-54 4 figs. [In Russian.]

Bjerkman, P. Notes on the Greenland shark *Acanthorhinus carcharias* (Gunn). 1. The reproduction problem of the Greenland shark. Fiskeridir. Skr. Havundersøk. 11 No. 10 : 1-7.

Bjorklund, R. G. see Bardach, J. E.

Black, E. C. (1). Alterations in the blood level of lactic acid in certain salmonoid fishes following muscular activity. I. kamloops trout, *Salmo gairdneri*. J. Fish. Res. Bd. Can. 14 : 117-134 4 figs.

Black, E. C. (2). Alterations in the blood level of lactic acid in certain salmonoid fishes following muscular activity. II. Lake trout, *Salvelinus namaycush*. J. Fish. Res. Bd. Can. 14 : 645-649.

Black, V. S. see Brown, M. E.

Blair, A. A. (1). Salmon tagging at Francis Harbour Bight, Labrador. J. Fish. Res. Bd. Can. 14 : 135-140 1 fig.

Blair, A. A. (2). Salmon tagging at Cape Charles, Labrador. J. Fish. Res. Bd. Can. 14 : 141-144 1 fig.

Blanc, M. Sur les poissons des grands lacs africains. C.R. Soc. Biogéogr. 31 1954 : 35-38.

Blanco, G. J. & Montalban, H. R. A bibliography of Philippine fishes and fisheries. Philipp. J. Fish. 1 1956 : 107-130.

Blanco, G. J. & Villaladid, D. V. The young of some fishes of Luzon. Philipp. J. Fish. 1 1951 : 67-93 35 figs.

Bloch, J. see Gros, C. M.

Blok, J. W. de. On the architecture of the asymmetrical head in *Pleuronectes platessa* L. IV. Proc. Akad. Wet. Amst. 60C : 77-89 5 figs.

Boden, B. P. see Kampa, E. M.

(Bodrova, N. V., Krayukhin, B. V., Malyarevskaya, A. Y.). [Importance of artificial food for young carp.] Ichth. Probl. Moscow 6 1956 : 149-155. [In Russian.]

Boeseman, M. (1). On a collection of East Asian fishes. Zool. Meded. 35 : 69-78 1 pl.

Boeseman, M. (2). On a collection of fishes from Stanley Pool (Belgian Congo). Zool. Meded. 35 : 139-151 1 pl.

Böhlke, J. (1). A new shallow-water brotulid fish from the Great Bahama Bank. *Notul. nat. Acad. Philad.* No. 295 : 1-8 1 fig.

Böhlke, J. (2). The Bahaman species of Emblemariid blennies. *Proc. Acad. nat. Sci. Philad.* 109 : 25-57 3 pls. 3 figs.

Böhlke, J. (3). On the occurrence of garden eels in the Western Atlantic, with a synopsis of the Heterocongrinae. *Proc. Acad. nat. Sci. Philad.* 109 : 59-79 1 pl. 7 figs.

Böhlke, J. (4). A review of the blenny genus *Chaenopsis*, and the description of a related new genus from the Bahamas. *Proc. Acad. nat. Sci. Philad.* 109 : 81-103 2 pls. 3 figs.

Böhlke, J. & Chaplin, C. C. G. Oral incubation in Bahaman jawfishes *Opisthognathus whitehursti* and *O. maxillosus*. *Science* 125 : 353 1 fig.

Böhlke, J. & Cohen, D. M. The Eastern Pacific species of *Callionymus*. *Copeia* 1957 : 159-160.

Böhlke, J. & Mead, G. W. A new blenny from the coast of western Mexico. *Notul. nat. Acad. Philad.* No. 301 : 1-8 1 pl. 1 fig.

Bolin, R. L. Age and growth of the myctophid fish *Lampanyctus leucosarus* (Eigenmann & Eigenmann). *Int. Congr. Zool.* 14 1953 (1956) : 541-542.

Bondy, P. K., Upton, G. V. and Pickford, G. E. Demonstration of cortisol in fish blood. *Nature, London* 179 : 1354-1355.

Bont, A. F. de (1). Premiers essais de rizipisciculture à la station de recherches piscicoles (Katanga). *Bull. Agric. Congo belge* 46 1955 : 1550-1553 2 figs.

Bont, A. F. de (2). Lutte contre les mollusques dans les eaux africaines. *Bull. Agric. Congo belge* 47 1956 : 377-380.

Bont, A. F. de (3). Contrôle biologique des mollusques d'eau douce et des maladies qu'ils transmettent. *Ann. Soc. belge Méd. trop.* 36 1956 : 667-672.

Bont, A. F. de & Maes, H. Relation entre le frai du *Labeo altivelis* Peters et la conductivité des eaux. *Hydrobiologia* 8 1956 : 288-292.

Bont-Hers, A. F. & M. J. de. *Haplochromis mellandi* Blgr. Poisson malacophage. (Fam. Cichlidae). *Rev. zool. bot. Afr.* 53 1956 : 370-376 1 fig.

Borisov, P. G. & Ovsyannikov, N. S. [Key to fishes of economic importance in the USSR]. Moscow, 1954 pp. 260 306 figs. [In Russian.]

(Borutzki, E. V.). (Method of studying the feeding of herbivorous fishes.) *Trud. Sovesh. Ikhtiol. Komm.* 6 1954 (1955) : 54-61. [In Russian.]

Boschung, H. T. Some interesting records of marine fishes from Alabama. *J. Ala. Acad. Sci.* 29 : 33-35.

Bouillon, J. *see* Brien, P.

Boursot, J. B. The poraqué. *Aquarist & Pondkpr.* 22 : 99-100; 130-131 2 figs.

Boute, A. Sur une cause possible des hécatombes de Poissons. *C.R. Soc. géol. Fr.* 1957 : 104-105.

Bowers, A. B. (1). Age and size of Manx herring in 1954. *Rep. Mar. biol. Sta. Pt. Erin.* 67 1954 [1955] : 31-33.

Bowers, A. B. (2). Age and size of Manx herring in 1955. *Rep. Mar. biol. Sta. Pt. Erin* No. 68, 1955 [1956] : 17-19.

Bowers, A. B. (3). Age and size of Manx herrings in 1956. *Rep. Mar. Biol. Sta. Pt. Erin.* 69 1956 : 18-20.

(Braginskaya, R. Y.). [The development of *Alosa kessleri volgensis* and *A. kessleri kessleri*.] *Trud. Inst. Morf. Zhiv.* 16 : 171-180 fig. [In Russian.]

Braginskaya, R. Y. *see* Vasnetzov, V. V.

Brandon, A. M. *see* Cordier, D.

Brânzei, P. & Jitariu, P. Notes sur l'épilepsie expérimentale. La dynamique des chromatophores pendant l'épilepsie expérimentale chez certaines espèces de poissons marins. *Stud. Cercet. Acad. române. Fil. Iasi* 2 1-2 1951 : 210-225. [French summary.]

Brayshaw, J. D. *see* Hartley, W. G.

Breder, C. M. A note on preliminary stages in the fossilization of fishes. *Copeia* 1957 : 132-135 1 pl.

Brett, J. R. Salmon research and hydro-electric power development. *Bull. Fish. Res. Bd. Can.* No. 114 : 1-26 2 figs.

- Brett, J. R.** *see* Alderdice, D. F.
- Brett, J. R.** *see* Brown, M. E.
- Breuer, J. P.** Ecological survey of Baffin and Alazan Bays, Texas. Publ. Inst. Mar. Sci. Univ. Tex. **4** No. 2: 134-155.
- Brien, P., Poll, M. & Bouillon, J.** Éthologie de la reproduction d'un Dipneuste africain *Protopterus dolloi* (Boulenger). C.R. Acad. Sci. Paris **245**: 1988-1990.
- Briggs, J. C.** A new genus and two new species of Eastern Atlantic clingfishes. Copeia **1957**: 204-208 3 figs. 1 pl.
- Briggs, J. C. & Caldwell, D. K.** *Acanthurus randalli*, a new surgeonfish from the Gulf of Mexico. Bull. Fla. St. Mus. **2**: 43-51 5 figs.
- Briggs, J. C.** *see* Caldwell, D. K.
- Broadhead, G. C.** Changes in the size structure of the yellow fin tuna population of the tropical Eastern Pacific Ocean from 1947-1955. Bull. Inter-Amer. Tuna Comm. **2**: 1-20.
- Brown, D. G. & Rosen, W. G.** A progress report on the study of perch movement in Lake Okoboji, Dickinson County, Iowa. Proc. Iowa Acad. Sci. **58** 1951: 423-434 2 figs.
- Brown, J. L. (1).** Distinguishing characters of the cyprinodont fishes, *Fundulus cingulatus* and *Fundulus chrysotus*. Copeia **1956** No. 4 [1957]: 251-255.
- Brown, J. L. (2).** A key to the species and subspecies of the cyprinodont genus *Fundulus* in the United States and Canada east of the Continental Divide. J. Wash. Acad. Sci. **47**: 69-77.
- Brown, M. E. & others.** The physiology of fishes. Vol. 1. Metabolism pp. xiii + 447; Vol. 2. Behaviour pp. xi + 526 figs. New York (Academic Press).
- Brown, W. H.** *see* Hubbs, C.
- Brull, L.** L'azote non-protéique du plasma de *Scyliorhinus canicula*. Vie et Milieu **7** 1956: 521-522.
- Bsharah, L.** Plankton of the Florida Current. V. Environmental conditions, standing crop, seasonal and diurnal changes at a station forty miles east of Miami. Bull. mar. Sci. Gulf & Caribbean **7**: 201-251 45 pls.
- Buchholz, M.** Age and growth of river carpsucker in Des Moines River, Iowa. Proc. Iowa Acad. Sci. **64**: 589-600 1 fig.,
- Buckridge, T. N.** *see* Donaldson, L. R.
- Budker, P.** *see* Le Danois, E.
- Buen, F. de (1).** La oceanografía frente a las costas del Uruguay. Ann. Mus. Hist. nat. (2) **6** 1953: 1-37 12 figs.
- Buen, F. de (2).** Los peces de la familia Molidae. Invest. zool. Chil. **4**: 66-76 6 figs.
- Buen, F. de (3).** Suborden Luvaroidei, nuevo para la fauna Chilena. Invest. zool. Chil. **4**: 83-88 2 figs.
- [Buistrov, A. P.]** [Evolyntziya zubov pozvonchniukh.] Annu. Soc. paléont. russe **14** 1953: 39-60 figs.
- Bull, H. O.** *see* Brown, M. E.
- Bullis, H. R.** *see* Springer, S.
- Burd, A. C.** *see* Cushing, D. H.
- (Burdak, V. D.).** [Peculiarities in the ontogenetic and phylogenetic relationship in Black Sea mullet (*Mugil sabiens*, *M. auratus*, *M. cephalus*).] Trav. Sta. biol. Sebastapol **9**: 243-273 16 figs. [In Russian.]
- (Burmakin, E. V.).** [On changes in the morphology of carp acclimatized in the Lake Balkhash basin.] Zool. Zh., Moscow **35** 1956: 1887-1891. [Russian with English Summary.]
- Buschendorf, C.** Eine neue Zuchtform des Scalare. Aquar. Terrar. Z. **10**: 200, 1 text-fig.
- Buşniță, Th. & Arachelian, I.** Quelques données concernant la pêche maritime roumaine et bulgare dans l'intervalle 1940-1954. Bul. Inst. Cercet. Pisc. Roman. **16** (1): 13-35. [French summary.]
- Buşniță, Th. & others (1).** Premiers essais d'acclimatation des Corégones dans les eaux de la République Populaire Roumaine. Bul. Inst. Cercet. Pisc. Roman **16** No. 2: 5-19. [French summary.]
- Buşniță, T., & others (2).** La gynogénèse chez *Carassius auratus gibelio* Bloch. Comun. Acad. Rep. Pop. Romine **7**: 81-87 3 pls. [French summary.]

Butler, R. L. The development of a vinyl plastic subcutaneous tag for trout. *Calif. Fish Game* **43** : 201-212, 4 figs.

(**Butzkaya, N. A.**) [On the peculiarities of the function of the testis in fish in various types of spawning.] *C.R. Acad. Sci. URSS* **100** 1955 : 809-812 fig. [In Russian.]

Buznikov, G. A. *see* Baburina, E. A.

Bystrow, A. P. The microstructure of dermal bones in arthrodires. *Acta Zool. Stockholm*, **38** : 239-275, 25 text-figs.

Cailleux, A. *see* Chavan, A.

Cairns, J. & Scheier, A. The effects of temperature and hardness of water upon the toxicity of zinc to the common bluegill (*Lepomis macrochirus* Raf.). *Notul. Nat. Philad. No.* 299 : 1-12 tabs.

Caldito, E. B. *see* Sulet, J. I.

Caldwell, D. K. The biology and systematics of the pin fish, *Lagodon rhomboides* (Linnaeus). *Bull. Fla. St. Mus. Biol. Sci.* **2** : 77-173 22 figs.

Caldwell, D. K. & Briggs, J. C. Range extensions of Western North Atlantic fishes with notes on some soles of the genus *Gymnachirus*. *Bull. Fla. Acad. Sci.* **2** 1 : 1-11.

Caldwell, D. K. *see* Briggs, J. C.

Caldwell, D. K. *see* Kilby, J. D.

Callan, H. G. The lampbrush chromosomes of *Sepia officinalis* L., *Anilocra physodes* L. and *Scyllium catulus* Cuv. and their structural relationship to the lampbrush chromosomes of Amphibia. *Publ. Staz. zool. Napoli* **29** : 329-346 2 pls. 4 text-figs.

Cameron, I. A preliminary report on examination of salmon and scale readings. *Salm. Trout Mag. No.* 151 : 256-274 15 figs.

Canagaratnam, P. & Medcof, J. C. Ceylon's beach seine fishery. *Bull. Fish. Res. Sta. Ceylon No.* 4 1956 : 1-32 5 figs.

Cantacuzene, A. M. *see* Devillers, C.

Capco, S. R. & Manacop, P. R. The Abuyan, an improved type of goby fishing gear, used in Laguna de Bay with notes on the composition of the commercial catches. *Philipp. J. Sci.* **3** 1955 : 65-84 7 pls., 8 figs.

Caraiman, I. G. Observations sur le rythme de croissance des petits de la carpe de culture de l'étang Tataraseni. *Bul. Inst. Cercet. Pisc. Roman* **16** No. 2 : 53-60.

Carlander, K. D. An unusually large population of fish in a gravel pit lake. *Proc. Iowa Acad. Sci.* **58** 1951 : 435-440.

Carlander, K. D. & Moorman, R. B. Standing crops of fish in Iowa ponds. *Proc. Iowa Acad. Sci.* **63** 1956 : 659-668.

Carlo, J. M. de & Lopez, R. B. La valvula intestinal del pejerrey. *Notas mus. Univ. nac. La Plata, Zool.* **19** : 161-169 6 figs.

Carmin, J. Treasures of our seashore. Tel-Aviv (Yavnek Publ. House) pp. 368, text illust.

Carter, G. S. *see* Brown, M. E.

Casasco, E. Primi dati sulla innervazione recettoria e vegetativa del labirinto membranoso dei pesci. *Monit. Zool. Ital.* **65** Suppl. : 164-166 2 figs.

Cassie, R. M. Condition factor of snapper, *Chrysophrys auratus* Forster, in Hauraki Gulf. *N.Z. J. Sci. Tech.* **38B** : 375-388 3 figs.

Cautis, I. *see* Nicolae, I.

Cautis, I. *see* Pora, E. A.

Cavaliere, A. Su rari stadi larvali e giovanili di *Pomatichthys constrictae* Gigl. e relativa differenziazione da stadi giovanili della specie affine *Pomatomus telescopium* Risso. *Boll. Pesca Piscic. Idrobiol.* **32** fasc. 1 1956 [1957] : 121-127 1 pl.

Chambers, R. & E. L. *see* Kao, C. Y.

Chaplin, C. C. G. *see* Böhlke, J.

Chaturin, B. M. *see* Alverson, D. L.

Chavan, A. & Cailleux, A. Détermination pratique des fossiles Paris, : 1-385 figs.

Chi, Y. S. Upper Devonian *Bothriolepis* beds of Yunnan. *Sci. Rec. Acad. Sinica* **1** 1944 : 171-174.

Chlupaty, P. *Dascyllus aruanus*, der Preussenfisch. *Aquar. Terrar. Z.* **10** : 209 figs. 1 and 2.

Chopard, L. Un poisson qui peut vivre sans eau. Le protoptère. *Nature*, Paris No. 3261 : 30-34 6 figs.

(Chubareva, L. A.) [Cytological and cytochemical investigations on fertilization in *Lampetra fluviatilis*.] C.R. Acad. Sci. URSS **112** : 945-948 3 figs. [In Russian.]

Čihár, J. Systematical and biological notes on the pike (*Esox lucius* L.). Univ. Carolina, Praga **1** Biol. **1** 1955 : 1-18 3 figs. [English summary.]

Citterio, P. & others. On the presence of actin and myosin in the electric organ of the *Torpedo*. Pubbl. Staz. zool. Napoli **29** : 434-438 2 figs.

Citterio, P. see Maldacea, L.

Clancey, J. F. A contribution to the life history of the fish, *Bregmaceros atlanticus* Goode and Bean, from the Florida current. Bull. mar. Sci. Gulf and Caribbean **6** 1956 : 233-260 8 figs.

Clark, E. E. see Humm, D. G.

Clark, M. R. see Musacchia, X. J.

Clavert, J. & Zahnd, J. P. (1). Modifications hépatiques durant la gestation chez deux poissons ovovivipares (*Xiphophorus helleri* et *Lebistes reticulatus*). C.R. Soc. Biol., Paris **150** : 2257-2259.

Clavert, J. & Zahnd, J. P. (2). Modifications hépatiques survenant pendant la vitellogenèse chez deux espèces de poissons ovovivipares (*Xiphophorus helleri* et *Lebistes reticulatus*). C.R. Soc. Biol. Paris **150** 1956 : 1261-1263.

Cleary, R. E. An annotated checklist of fishes of the Wapsipinicon River drainage system in Iowa. Proc. Iowa Acad. Sci. **59** 1952 : 435-441 1 fig.

Clemens, H. B. Fishes collected in the tropical eastern Pacific, 1954. Calif. Fish Game **43** : 299-307 1 fig.

Clements, M. The proteolytic activity of the thyroid and other tissues of the dogfish, *Scyliorhinus (Scyllium) canicula*. Bull. Inst. Oceanogr. Monaco No. 1091 : 1-10 3 figs.

Coates, C. W. see Atz, J. W.

Coffin, G. W. see Scattergood, L. W.

Cohen, D. M. Notes on the identity of several salariine blennies of the genus *Scartichthys* from western South America. Copeia **1956** No. 4 [1957] : 246-248.

Cohen, D. M. see Böhlke, J.

Colas, J. see Devillers, C.

Concha, B. F. & Vargas, F. F. Actividad eléctrica del corazón del Teleosteo *Sicyases sanguineus*. Invest. Zool. Chil. **3** : 96-105 6 figs.

Concha, B. F. see Vargas, F. F.

Cooper, L. B. & Hemphill, A. F. Record soft he lamprey *Lampetra aepyptera* from Alabama. Copeia **1957** : 54.

Coraboeuf, E. see Gargouil, Y. M.

Cordier, D., Barnaud, R. & Brandon, A. M. Influence du passage de l'eau de mer à l'eau douce et de l'eau de mer sursalée sur les échanges respiratoires du Gobie (*Gobius auratus* et *Gobius lota*). C.R. Soc. Biol. Paris **151** : 739-742 2 figs.

Cordier, D. & Maurice, A. (1). Étude sur l'absorption intestinale des Sucres chez l'anguille (*Anguilla vulgaris* L.) vivant dans l'eau de mer ou dans l'eau douce. C.R. Soc. Biol. Paris **150** : 1957-1959.

Cordier, D. & Maurice, A. (2). Recherches sur l'absorption intestinale des solutions de pentoses et d'hexoses chez le Brochet (*Esox lucius*, L.). C.R. Soc. Biol. Paris **151** : 116-118.

Cordier, D. & Worbe, J. F. Influence de pH du milieu intestinal sur l'absorption du glucose chez la Rascasse (*Scorpaena porcus*, L.). C.R. Soc. Biol. Paris **151** : 121-124.

Costea, E. see Vasiliu, G. D.

Couteaux, R. & Laurent, P. Étude au microscope électronique du coeur de l'Anguille, observations sur la structure du tissu musculaire de l'oreillette et son innervation. C.R. Acad. Sci. Paris **245** : 2097-2100 10 figs.

Creteanu, A. see Gyurko, S.

Cristea, A. & E. see Teodorescu-Leonte, R.

Cristian, A. see Busnita, T.

Crossman, E. J. Growth, mortality and movements of a sanctuary population of maskinonge (*Esox masquinongy* Mitchill). J. Fish. Res. Bd. Can. **13** 1956 : 599-612.

Cruz, J. A. M. (1). A sardinha do norte de Portugal (*Sardina pilchardus* Walb.). Características etárias e de reprodução. An. Fac. Ciênc. Porto **37** 1953 : 217-250 3 pls. [English summary.]

Cruz, J. A. M. (2). Sur la succession de générations dans la pêche à la sardine, au nord du Portugal, et ses possibles conséquences d'ordre économique. *An. Fac. Ciênc. Porto* **38** 1954 : 72-75 fig.

Curitan, A. *see* Gyurko, S.

Curry-Lindahl, K. Fiskarna i Färg-Stockholm (Almquist & Wiksell) 1953, pp. viii + 189, 64 pls. col. [incl. in pagination].

Cushing, D. H. (1). The interpretation of echo traces. *Fish. Invest. Lond. Ser. 2*, **21** No. 3 : 1-16 14 figs.

Cushing, D. H. (2). The number of pilchards in the Channel. *Fish. Invest. Lond. Ser. 2*, **21** No. 5 : 1-27, 15 figs.

Cushing, D. H. & Burd, A. C. On the herring of the Southern North Sea. *Fish. Invest. Lond. Ser. 2*, **20** No. 11 : pp. iv + 31, 16 figs.

Cushing, J. E. & Durall, G. L. Isoagglutination in fish. *Amer. Nat.* **91** : 121-126.

Daget, J. Données récentes sur la biologie des poissons dans la delta central du Niger. *Hydrobiologia* **9** : 321-347 5 figs.

Dalenius, P. Studium av en elrits-population i en lappländsk fjällsjö. *Fauna och Flora* **52** : 125-136 2 figs.

Daniil'chenko, P. G. Novuii rod semeistva Bregmacerotidae. *Mater. K. Osnovam Palaeont., Akad. Nauk. SSSR* **1** : 57-59 1 text-fig.

David, L. R. Fishes (other than Agnatha) in Treatise on marine ecology and paleoecology. Vol. 2. *Mem. Geol. Soc. America* **67** : 999-1010.

Davies, D. H. (1). The South African pilchard (*Sardinops ocellata*). Size composition of the commercial catches, 1950-55. *Invest. Rep. Div. Fish. S. Afr. No. 26* : 1-59 14 pls. 6 figs. tabs.

Davies, D. H. (2). The South African pilchard (*Sardinops ocellata*). Preliminary report on feeding off the west coast, 1953-56. *Invest. Rep. Div. Fish. S. Afr. No. 30* : 1-40, 17 pls.

Davies, D. H. (3). The biology of the South African pilchard (*Sardinops ocellata*). *Invest. Rep. Div. Fish. S. Afr. No. 32* : 1-11 3 figs.

Dawson, E. Y. *see* Mohr, J. L.

Day, L. R. *see* Leim, A. H.

(Demetrashvili, M. G.). [The fishes of Khramisk water reservoir and of the rivers Khrami and Agri-Chai]. *Trud. Inst. Zool. Tiflis* **13** 1954 : 133-178. [In Russian.]

Denton, E. J. Recherches sur l'absorption de la lumière par le cristallin des poissons. *Bull. Inst. oceanogr. Monaco No. 1071* 1956 : 1-10 2 figs.

Denton, E. J. & Warren, F. J. The photosensitive pigments in the retinae of deep-sea fish. *J. Mar. Biol. Ass. U.K.* **36** : 651-662 2 figs.

Denzer, W. Elektro-fischerei. *Kosmos, Stuttgart* **49** 1953 : 49-52 5 figs.

de Sylva, D. P. Studies on the age and growth of the Atlantic sail fish, *Istiophorus americanus* (Cuvier), using length-frequency curves. *Bull. mar. Sci. Gulf & Caribbean* **7** : 1-20 7 figs.

Devillers, C., Colas, J. & Cantacuzène, A. M. Gastrulation de l'oeuf de Truite (*Salmo irideus*) en l'absence d'oxygène on en présence d'inhibiteurs du métabolisme. *C.R. Acad. Sci. Paris* **245** : 1461-1462.

Devillers, C. & others. Différentiation *in vitro* de blastodermes de truite (*Salmo irideus*) dépourvus de couche enveloppante. *J. Embryol. Exp. Morph.* **5** : 264-273 3 figs.

Dieuzeide, R. Les myxines (*Myxine glutinosa* L.) en Méditerranée. *Bull. Sta. Aquic. Pêche Castiglione No. 8* 1956 [1957] : 75-80.

Dieuzeide, R., & Roland, J. (1). Opérations de dragages et de chalutages effectuées au large des Côtes Algériennes au cours des années 1954 et 1955. *Bull. Sta. Aquic. Pêche Castiglione No. 8* 1956 [1957] : 11-27, 2 figs.

Dieuzeide, R. & Roland, J. (2). Complément au catalogue des poissons des Côtes Algériennes. *Bull. Sta. Aquic. Pêche Castiglione No. 8* 87-106 4 pl.

Dieuzeide, R. & Roland, J. (3). Étude biométrique de *Sardina pilchardus* Walb. et de *Sardinella aurita* C.V. capturées dans la Baie de Castiglione. *Bull. Sta. Aquic. Pêche Castiglione No. 8* 1956 [1957] : 111-225 28 figs.

Dieuzeide, R. & Roland, J. (4). Observations relevées sur les sardines (*Sardina pilchardus* Walb.) de la Baie de Castiglione parasitées par *Peroderma cylindricum* Heller. Bull. Sta. Aquic. Pêche Castiglione No. 8 1956 [1957]: 239-249 1 fig.

Dimitriu, M. see Busnita, J.

Dimoftache, M. see Gyurko, S.

Dineen, C. F. & Stokely, P. S. The osteology of the sacramento perch, *Archoplites interruptus* (Girard). Copeia 1956 No. 4 [1957]: 217-230 f. 1-13.

(Disler, N. N.) [The development of autumn keta (*Oncorhynchus keta* (Walb.)) in the river Amur.] Trud. Inst. Morf. Zhiv. 20: 3-70 16 figs. [In Russian.]

(Dmitrieva, E. N.) (1). [Stages of development of *Abramis brama*, *Rutilus rutilus heckeli* and *Lucioperca lucioperca* in Taganrog Bay.] Trud. Inst. Morf. Zhiv. 16: 77-101 4 figs. [In Russian.]

(Dmitrieva, E. N.) (2). [Morphological and ecological analysis of two species of crucian carp.] Trud. Inst. Morf. Zhiv. 16: 102-170 9 figs. [In Russian.]

Dmitrieva, E. N. see Vasnetzov, V. V.

Döderlein, L. Bestimmungsbuch für deutsche Land-und Süßwassertiere. Wirbeltiere... 2, erweiterte Auflage. München (R. Oldenbourg) 1955, pp. 304, 266 figs.

Domurat, J. Embryonic development of trout (*Salmo trutta* L.) pike (*Esox lucius* L.) and roach (*Rutilus rutilus* L.) in the environment deprived of water. Polsk. Arch. Hydrobiol. 3 1956: 167-173. (English summary.)

Donaldson, L. R., Hansler, D. D. and Buckridge, T. N. Interracial hybridization of cutthroat trout, *Salmo clarkii*, and its use in fisheries management. Trans. Amer. Fish. Soc. 86 (1956) 1957: 350-360, 2 text-figs.

Donaldson, L. R. & Olson, P. R. Development of rainbow trout brood stock by selective breeding. Trans. Amer. Fish. Soc. 85 (1955): 93-101 4 figs.

Dorn, E. Das Zwischenhirn von *Protopterus*. Verh. dtsh. zool. Ges. 1956: 226-230, 7 figs.

Dorr, J. A. A pleuracanth shark spine from the early Pennsylvanian, Saginaw formation, of Michigan. Pap. Mich. Acad. Sci. 42: 99-104 1 fig.

Dôtu, Y. (1). A new species of a goby with a synopsis of the species of the genus *Luciogobius* Gill and its allied genera. J. Fac. Agric. Kyushu Univ. 11: 69-76.

Dôtu, Y. (2). The life history of the small, transparent goby, *Gobius lidwilli* McCulloch. Sci. Bull. Fac. Agric. Kyushu Univ. 16: 85-92 3 figs.

Dôtu, Y. (3). The life-history of the goby, *Luciogobius guttatus* Gill. Sci. Bull. Fac. Agric. Kyushu Univ. 16: 93-100 6 figs. [English Summary.]

Dôtu, Y. (4). On the bionomics and life history of the eel-like goby, *Odontamblyopus rubicundus* (Hamilton). Sci. Bull. Fac. Agric. Kyushu Univ. 16: 101-110 9 figs. [English summary.]

Dôtu, Y. (5). The bionomics and life history of the goby, *Triaenopogon barbatus* (Günther) in the innermost part of Ariake Sound. Sci. Bull. Fac. Agric. Kyushu Univ. 16: 261-274 5 figs.

Doudoroff, P. see Brown, M. E.

Doumenge, F. La pêche à Bermeo (Espagne). Vie et Milieu 7 1956: 307-325 5 figs.

Downing, K. M. & Merkens, J. C. The influence of temperature on the survival of several species of fish in low tension of dissolved oxygen. Ann. appl. Biol. 45: 261-267 3 figs.

Downing, K. M. see Merkens, J. C.

Dragotoiu, C. see Busnita, T.

(Drapkin, E. I.) [On the nuptial attire of female sticklebacks]. Ichth. Probl., Moscow 7 1956: 119-122 1 fig. [In Russian.]

Drilhon, A. & Fine, J.-M. Les albumines chez quelques espèces de poissons. C.R. Acad. Sci. Paris 245: 1676-1679.

Drilhon, A., Fine, J., Uriel, J. & Le Bourdelles, F. Étude électrophorétique des constituants du serum de l'Anguille. C.R. Acad. Sci. Paris 243 1956: 1802-1805.

Dubinina, V. N. see Shulman, G. E.

Dudek, J. Beitrag zur Bestimmung des Lichteinflusses auf die Intensität der Nahrungsaufnahme beim Güster (*Blicca bjoerkna* L.). *Biologia, Bratislava* 12 : 374-376. [German summary.]

Duijn, C. W. A case of spontaneous sarcoma in fish. *Microscope* 11 : 133-138 9 figs.

Durall, G. L. *see* Cushing, J. E.

Dürr, W. Untersuchungen über die verschiedene Gestalt der Schuppen beim Karpfen, *Cyprinus carpio* L. (nach Beobachtungen an Schuppenkarpfen). *Z. Fisch.* 5 : 325-421 69 figs.

Dziekowska, J. Studies on embryonic development of fish. I. Observations on the spawning and the embryonic development of bream in the Vistula Lagoon. *Polsk. Arch. Hydrobiol.* 3 1956 : 291-305 18 figs. [English summary.]

Ebeling, A. W. The dentition of Eastern Pacific mullets, with special reference to adaptation and taxonomy. *Copeia* 1957 : 173-185 3 pls. 7 figs.

Ebeling, A. *see* Kanwisher, J.

Edinger, T. Paired pineal organs. "Progress in Neurobiology" (Proc. 1st Internat. Meeting Neurobiol., Amsterdam, 1955, 1956 : 121-129 4 text-figs.

Egami, N. Inhibitory effect of thiourea on the development of male characteristics in females of the fish *Oryzias latipes*, kept in water containing testosterone propionate. *Annot. zool. jap.* 30 : 26-30.

Egami, N. *see* Ishii, S.

(Egorov, A. G.). (Stocking the river Angare with grayling). *Ichth. Probl. Moscow* 6 1956 : 121. [In Russian.]

Eibl-Eibesfeldt, I. Bericht von einer Reise zu den Galápagos-Inseln unter besonderer Berücksichtigung verhaltenskundlicher, herpetologischer und ichthyologischer Beobachtungen (2.) *Aquar. Terrar. Z.* 10 : 38-43 figs. 3-8.

(Elanidge, R. F.) (1). [A study of the fish fauna of the river Alazan.] *Trud. Inst. Zool. Tiflis* 10 1951 : 161-186. [In Gruzian with Russian summary.]

(Elanidge, R. F.) (2). [The fish fauna of the river Sups.] *Trud. Inst. Zool. Tiflis* 13 1954 : 197-214. [In Gruzian with Russian summary.]

Ellis, R. J. & Gowing, H. Relationship between food supply and condition of wild brown trout, *Salmo trutta* Linnaeus, in a Michigan stream. *Limnol. and Oceanogr.* 2 : 299-308 3 figs.

Enns, T. *see* Scholander, P. F.

Erdman, D. S. Recent fish records from Puerto Rico. *Bull. mar. Sci. Gulf & Caribbean* 6 1956 : 315-340.

(Eremeeva, E. F.). [The horn teeth of young Cypriniformes and their adaptive significance in various stages of fish development.] *Trud. Inst. Morf. Zhiv.* 16 : 299-313 11 fig. [In Russian.]

Eremeeva, E. F. *see* Vasnetzov, V. V.

(Ereshchenko, V. I.) [Fish fauna in the river Sari-Su basin.] *Sborn. Rabot. Ikhtiol. Ghidrobiol.* 1 1956 : 94-123. [In Russian.]

Ermin, R. & Gordon, M. On the regeneration of piscine melanomas. *Int. Congr. Zool.* 14 1953 (1956) : 236.

Fahlbusch, K. *Pteraspis dunensis* Roemer eine heubebeitung der Pteraspiden funde (Agnathen) von Overath (Bez. Köln) *Palaeontographica* 108A 1-4 : 1-56 7 pl. figs.

(Faktorovich, K. A.) (1). [Liver regeneration in *Salmo irideus*.] *C.R. Acad. Sci. URSS* 110 1956 : 301-303. [In Russian.]

(Faktorovich, K. A.) (2). [Diseases of two year old trout kept on artificial food.] *Ichthyol. Prob. Moscow* 6 1956 : 156-164 3 figs. [In Russian.]

Fast, T. N. The occurrence of the deep-sea anglerfish, *Cryptopsaras couesii* in Monterey Bay, California. *Copeia* 1957 : 237-240 1 fig.

(Fedorov, A. V.) [On the adaptations of predatory fish to feeding on large and armed animals.] *Zool. Zh., Moscow* 35 1956 : 939-940. [In Russian.]

Fernandez Yopez, A. Contribución al estudio de la familia Belonidae. *Mem. Soc. Cienc. nat. La Salle* 8 1948 : 142-144 6 figs.

Fields, P. E. Guiding migrant salmon. *Scientific Monthly, Pa.* 85 July : 10-22 text-figs. 1-5.

Fine, J. M. *see* Drilhon, A.

Fisk, A. Experiments on the development of the acoustico-facialis complex and associated structures in the lamprey *Lampetra planeri* (Bloch). *Proc. zool. Soc. Lond.* **128** : 267-278 6 figs.

Fitzgerald, J. W. Range extension for the western mudminnow, *Novumbra hubbsi* Schultz. *Copeia* **1957** : 248.

Foersch, W. *Aphyosemion cognatum* Meinken, der "rote Prachtkärpfling." *Aquar. Terrar. Z.* **10** : 197-200, colour-plate and text-figs. 1-3.

Fontaine, M. & Motais, R. Influence du glucoside de disoxycorticosterone sur l'halotropisme de la jeune Anguille (civelle) et sa résistance aux eaux de mer sursalées. *C.R. Acad. Sci. Paris* **242** 1956 : 1359-1361.

Fontaine, M., Quérière, F. de la & Raffy, A. Action de l'hypophysectomie sur le métabolisme respiratoire de l'Anguille (*Anguilla anguilla* L.). *C.R. Soc. Biol. Paris* **151** : 232-233.

Fontaine, M. *see* Arvy, L.

Ford, E. River fishing thrills in Tanganyika. *Fishing Gazette* (Beckenham, England) **139** : 1115.

Forselius, S. Studies of Anabantid fishes. I-III. *Zool. Bidr. Uppsala* **32** : 93-597 18 pls. 78 figs.

(Fortunatova, K. R.) (1). [Method of studying feeding of predatory fishes.] *Trud. Sovesh. Ikhtiol. Komm.* **6** 1954 [1955] : 62-84 6 figs. [In Russian.]

Fortunatova, K. R. (2). [Some data on the effect of the predators upon the size of fish population.] *Zool. Zh., Moscow* **36** : 575-586. [English summary.]

Fosberg, W. *see* Starr, T. J.

Fowler, H. W. (1). A synopsis of the fishes of China. Part VII. The perch like fishes (completed). *Quart. J. Taiwan Mus.* **9** 1956 : 161-354 61 figs.

Fowler, H. W. (2). Notes on Australian Fishes. *Ichthyol. Notes Qd.* **1** : 65-72, 2 figs.

Fox, D. L. *see* Brown, M. E.

Franca, P. da (1). Contribuição para o conhecimento do Género *Merluccius*, no atlântico oriental, ao suldo Equador. *An. Ita. Inv. Ultramar, Lisbon* **9** No. 2 1956 : 47-98 11 figs.

Franca, P. da (2). Contribuição para o conhecimento dos Carangídeos (Carangidae, Pomatomidae e Coryphaenidae) de Angola. *An. Ita. Inv. Ultramar, Lisbon* **9** No. 2 1956 : 99-150 6 pls.

François, Y. Le déterminisme de la "concentration" dans la nageoire dorsale de *Salmo*. *C.R. Acad. Sci. Paris* **243** 1956 : 196-199.

Francesco, M. Contributo allo studio della biologia dello scombro (*Scomber scombrus* L.) del mare Tirreno. *Boll. Pesca Piscic. Idrobiol.* **31** 1956 : 120-148 14 figs.

François, Y. Quelques problèmes relatifs à la nageoire dorsale des Téléostéens. *Année biol.* (3) **33** : 413-426 7 figs.

Frank, S. The food of common bull-head (*Ameiurus nebulosus* Le Seuer 1819) in the Zabe (Elbe) region. *Univ. Carolina, Pragae Biol.* **1** 1955 : 19-24. [English summary.]

Frank, S. *see* Oliva, O.

Friedrich, G. Die Lebervenen des Karpfens (*Cyprinus carpio* L.). *Z. Fisch.* **5** : 303-313 3 pls.

Frost, W. E. (1). The growth of brown trout (*Salmo trutta* L.) in Haweswater before and after the raising of the level of the lake. *Salm. Trout Mag.* 1956 : 266-274.

Frost, W. E. (2). A note on eels (*Anguilla* spp.). *Piscator* No. **38** : [1-3] 1 fig.

Fry, D. H. *see* Hallock, R. J.

Fry, F. E. J. *see* Brown, M. E.

Fryer, G. A new species of *Gephyrochromis* from Lake Nyasa, with notes on its ecology and affinities. *Rev. Zool. Bot. afr.* **55** : 347-352, 1 fig.

Fujioka, J. *see* Yoshihara, T.

Gabe, M. Contribution à l'histologie du rein de l'hippocampe (*Hippocampus guttulatus* Cuvier). *Arch. Biol., Paris* **68** fasc. 1 : 29-43 1 pl.

Gabe, M. *see* Arvy, L.

Gadea, E. *see* Vallmitjana, L.

(Gaeviskaya, N. S.). [The basic tasks in the study of fish feeding in connection with the more important biological principles of fish breeding.] *Trud. Sovesh. Ikhtiol. Komm.* **6** 1954 [1955] : 8-21. [In Russian.]

Gail, R. & Rageau, J. Premières observations sur un poisson marin venimeux de la Nouvelle-Calédonie: la synancée (*Synanceia verrucosa* Bloch). Bull. Soc. Path. exot. **49** 1956 : 846-854 1 pl. 4 figs.

Gargouil, Y.-M. & Coraboeuf, É. Enrîgîstremet intracellulaire de l'activité électrique du ventricule de Roussette (*Scyliorhinus canicula* Linné). C.R. Acad. Sci. Paris **245** : 1949-1952.

Garnaud, J. (1). Note sur le squelette céphalique de *Balistes capriscus* L. Bull. Inst. océanogr. Monaco No. 108 1956 : 1-12 11 figs.

Garnaud, J. (2). Ethologie de *Dascyllus trimaculatus* (Rüppell). Bull. Inst. Océanogr. Monaco No. 1096 : 1-10 3 figs. [English summary.]

Garrick, J. A. F. Studies on New Zealand elasmobranchii. Part VI. Two new species of *Etmopterus* from New Zealand. Bull. Mus. Comp. Zool. Harv. **116** : 171-190 4 figs.

Garrod, D. J. A review of Lake Victoria Fishery service records 1951-1956. E.A.F.R.O. Pamph. No. 1 : 1-10.

Garside, E. T. see Pitt, T. K.

Gasowska, M. Research on a reciprocal cross-breeding of *Coregonus lavaretus maraenoides* Poliakow and *Coregonus albula* (L.). Food of the hybrids in breeding ponds. Polsk. Arch. Hydrobiol. **3** 1956 : 253-268. [English summary.]

Gehringer, J. W. Observations on the development of the Atlantic sailfish *Istiophorus americanus* (Cuvier) with notes on an unidentified species of istiophorid. Fish. Bull. U.S., **57** 1956 : 139-171 40 figs.

Genovese, S. Ulteriori osservazioni sui caratteri biometrici del tonno (*Thunnus thynnus* L.) Tirrenico—Il tonno intergenetico dello Stretto di Messina. Boll. Pesca Piscic. Idrobiol. **32** fasc. 1 1956 [1957] : 83-120.

George, M. G. The anatomy and histology of the swim-bladder in *Ophicephalus* (Bloch) or *Channa* Scopoli. J. zool. Soc. India **8** 1956 : 181-194 6 figs.

Georgescu, I. see Popescu-Gorj, A.

[Ghlikman, L. S.] (1). [O sistematičeskom zhachenii dobavochnenkh zubtzov na Zubakh akul semeistv Lamnidae i Scapanorhynchidae.] Trudui Geol. Muz. Karpinskogho **1** : 103-109 figs.

[Ghlikman, L. S.] (2). [O ghenetičeskoï svyazi semeistv Lamnidae i Odontaspidae i novuih rodakh verkhnemelovuih Lamnid.] Trudui Geol. Muz. Karpinskogho **1** : 110-117 figs.

[Ghorbach, L. P.] [Ob Olighotzenovuih Macrurida Vostochniikh Karpat.] Annu. Soc. paléont. russe **16** : 286-289, fig.

Gibbs, R. H. (1). Cyprinid fishes of the subgenus *Cyprinella* of *Notropis*. I. Systematic status of the subgenus *Cyprinella*, with a key to the species exclusive of the *lutrensis-ornatus* complex. Copeia **1957** : 185-195.

Gibbs, R. H. (2). A taxonomic analysis of *Myctophum affine* and *M. nitidulum*, two lantern-fishes previously synonymized, in the western North Atlantic. Deep-Sea Res. **4** : 230-237 5 figs.

Gibbs, R. H. (3). Cyprinid fishes of the subgenus *Cyprinella* of *Notropis*. III. Variation and subspecies of *Notropis venustus* (Girard). Tulane Stud. Zool. **5** : 175-203 6 figs.

Gibbs, R. H. see Mather, F. J.

Gibson, F. A. (1). Further specimens of shads from Irish waters. Irish Nats'. J. **12** 1956 : 109.

Gibson, F. A. (2). Further specimen of Greater weaver, *Trachinus draco* L. Irish Nats'. J. **12** 1956 : 110.

Gibson, F. A. (3). Further specimens of Red snake-fish, *Cepola rubescens* L. Irish Nats'. J. **12** : 138-139.

Gibson, F. A. (4). Specimen of *Urophycis blennoides* Brunn. taken off Dunmore East, Co. Waterford. Irish Nats'. J. **12** : 202-203.

[Ginzburg, A. S.]. [Lipids in the oocytes and in the eggs of *Acipenser stellatus*.] C.R. Acad. Sci. URSS **111** 1956 : 236-239 Pl. [In Russian.]

Godfrey, H. Mortalities among developing trout and salmon ova following shock by direct-current electrical fishing gear. J. Fish. Res. Bd. Can., **14** : 153-164.

Gogol', V. A. Systematic characters of *Gambusia* acclimatized in Uzbekistan. Zool. Zh., Moscow **36** : 459-462. (English summary.)

Good, R. Australasian floras. Nature, London, **179** : 926.

Goodwin, D. Picture the fish. Nat. Hist., N.Y. **65** 1956 : 440-442 figs.

Gordon, M. Hereditary differences in seven natural populations of the platyfish, *Xiphophorus maculatus*. Int. Congr. Zool. **14** 1953 (1956) : 172-176 3 figs.

Gordon, M. see Brown, M. E.

Gordon, M. see Ermin, R.

Gordon, M. S. Observations on osmoregulation in the arctic char (*Salvelinus alpinus* L.). Biol. Bull. Woods Hole **112** : 28-33

Gordon, M. S. & Backus, R. H. New records of Labrador fishes with special reference to those of Hebron Fjord. Copeia **1957** : 17-20.

Gossington, R. An aid to fish handling—tricaine. Aquarium J. **28** : 318-321 2 figs.

(Gosteeva, M. N.) [Peculiarity of the development of vobla, the Aral sea roach.] Ichth. Probl. Moscow **6** 1956 : 105-112 4 figs. [In Russian.]

Gottenbos, J. J. On the correlation between the muscles in the skull structure in the regio occipitalis and the regio otica in *Raja batis* L. I-III. Proc. Akad. Wet. Amst. **59C** 1956 : 541-553; 723-737 11 figs.

Gottlieb, E. The age and growth of the red mullet *Mullus barbatus* L. in Israel waters 1953-1955. Bull. Sea Fish. Res. Sta. Israel No. 12 1956 : 1-20 11 figs.

Gowing, H. see Ellis, R. J.

Graham, D. H. A treasury of New Zealand fishes 2nd edition, Wellington, N.Z. (A. H. & A. W. Reed) 1956, pp. 424 frontis. (port.) text illust.

Grangaud, R., Vignais, P., Massonet, R. & Moatu, J.-P. Biosynthèse de la vitamine A chez *Gambusia holbrooki* Grd. C.R. Acad. Sci. Paris **243** 1956 : 1170-1172.

Grant, E. M. see Stephenson, W.

Grassl, E. F. (1). Pelleted dry rations for trout propagation in Michigan hatcheries. Trans. Amer. Fish. Soc. **86** (1956) : 307-322 2 figs.

Grassl, E. F. (2). Possible value of continuous feeding of medicated dry diets to prevent and control pathogens in hatchery reared trout. Progr. Fish Cult. **19** : 85-88.

Grave, E. V. Fisch-Schuppen unter dem Mikroskop. Mikrokosmos **46** : 184-188 5 figs.

Greenbank, J. Aggregational behavior in a freshwater sculpin. Copeia **1957** : 157.

Greenwood, P. H. (1). A revision of the Lake Victoria *Haplochromis* species (Pisces, Cichlidae) Pt. II. *H. sawagei* (Pfeffer), *H. prodromus* Trewavas, *H. granti* Blgr and *H. xenognathus* sp. n. Bull. Brit. Mus. (nat. Hist.) Zool. **5** : 75-97 1 pl. 8 figs.

Greenwood, P. H. (2). Fish remains from the Mumba Cave, Lake Eyasi, in Lehmann U. Eine jungpleistozäne Wirbeltier fauna aus Ostafrika. Mitt. geol. (St.) Inst. Hamb. **26** : 125-130.

Greenwood, P. H. (3). The fishes of Uganda—III & IV. Uganda J. **21** : 47-80 22 figs. & 191-219 11 figs.

Greven, U. Wirbelsäulenverkrümmung einer Plötze (*Leuciscus rutilus*). Gewässer u. Abwässer No. 1 1953 : 70-76 9 figs.

Grey, M. New records of deep sea fishes including a new species, *Oneirodes bradburyae*, from the Gulf of Mexico. Copeia **1956** No. 4 [1957] : 242-246 2 figs.

Groenewald, A. A. v. J. The tiger-fish (*Hydrocyon vittatus*). Fauna & Flora, Pretoria, No. 6 1955 : 19-25 3 figs.

Gros, C. M. & Bloch, J. (1). Influence de la dose sur la survie d'un poisson, *Carassius carassius* (L.) après irradiation totale à 18°. C.R. Soc. Biol., Paris **151** : 169-172 2 figs.

Gros, C. M. & Bloch, J. (2). Influence de la température sur la survie d'un poisson *Carassius carassius* (L.) après irradiation totale. C.R. Soc. Biol. Paris **151** : 602-604.

Gross, W. Mundzähne und Hautzähne der Acanthodier und Arthrodiren. Palaeontographica A **109** 1-2 : 1-40 6 pls. figs.

Guffroy, S. Notes Paléoichthyologiques. Bull. Soc. géol. Fr. (6) **6** : 847-854 2 pls. figs.

Guibé, J. & Spillmann, J. Au sujet de quelques types de Cyprinidés (Poissons) de Cuvier et Valenciennes. Bull. Mus. Hist. nat. Paris (2) **29** : 462-463.

Gunter, G. Predominance of the young among marine fishes found in fresh water. Copeia **1957** : 13-16.

Gyurko, S. & others. La reproduction artificielle du chevaine et du barbeau a Manastur-Cluj. Bul. Inst. Cercet. Pisc. Roman. **16** No. 2 : 46-52. [French summary.]

Hachey, H. B. *see* Leim, A. H.

Hagen, D. W. *see* Warburton, B.

Hajny, R. A. *see* Welandar, A. D.

Hale, H. M. Der Fetzenfisch, ein seltsam esüdaustralische Seepferdchen. Natur u. Volk **87** : 382-385 2 figs.

Hall, D. N. F. Recent developments in the Barbadian flying-fish fishery and contributions to the biology of the flying-fish. Fish. Publ. Lond. No. 7, 1956 : 1-41.

Hallock, R. J. & others. The use of wire fyke traps to estimate the runs of adult salmon and steelhead in the Sacramento River. Calif. Fish Game **43** : 271-298, 10 figs.

Halstead, B. W. Weever stings and their medical management. U.S. Armed Forces Med. J. **8** : 1441-1451 8 figs.

Halstead, B. W. *see* Kawabata, T.

Hamada, K. A new osmerid fish, *Hypomesus sakhalinus* new species, obtained from Lake Taraika, Sakhalin. Jap. J. Ichthyol. **5** : 136-142 3 figs.

Hamon, M. Sur le trajet des fibres nerveuses optiques chez le poisson Cyprinodonte *Gambusia holbrooki* Gir. C.R. Acad. Sci. Paris **245** : 2396-2399 1 fig.

Haneveld, G. T. Injuries caused by garfish-like fishes in Netherlands New Guinea. Docum. Med. geogr. trop. **8** 1956 : 96-98.

Hansen, H. Let's go on an African safari (fish collecting, that is). Aquarium, Philad. **26** : 129-133.

Hansler, D. D. *see* Donaldson, L. R.

Hardisty, M. W. Osmotic conditions during the embryonic and early larval life of the brook lamprey. (*Lampetra planeri*). J. exp. Biol. **34** : 237-252 3 figs.

Harrington, R. W. Sexual periodicity of the Cyprinid fish, *Notropis bifrenatus* (Cope), in relation to the phases of its annual reproductive cycle. J. exp. Zool. **135** : 529-556 1 pl. 4 figs.

Harrison, H. M. Growth of the channel catfish, *Ictalurus punctatus* (Rafinesque), in some Iowa waters. Proc. Iowa Acad. Sci. **64** : 657-666 3 figs.

Hartley, W. G. & Brayshaw, J. D. Movements of salmon off the North-East Coast of England. Fish. Invest. Lond. (1) **5** No. 8 1955 : 1-17 2 figs.

Harvey, E. N. *see* Brown, M. E.

Hasan, G. Contributii la studiul musculaturii laterale la Stavrid (*Trachurus trachurus trachurus* L.). Bul. sti. Acad. Repub. rom. Sect. Biol., **3** 1951 : 703-714 3 figs. [French résumé.]

Hashitani, S. *see* Imamura, J.

Hasler, A. D. *see* Brown, M. E.

Haven, D. S. Distribution, growth, and availability of juvenile croaker. *Micropogon undulatus* in Virginia. Ecology **38** : 88-97 8 figs.

Hayama, K. *see* Kubota, Z.

Hayama, K. *see* Syazuki, K.

Hayashi, S. & Suzuki, H. Growth of the Japanese anchovy. III. Vertebral counts of the post larvae. Bull. Tokai Fish. Res. Lab. **15** : 21-28, 3 figs.

Hayes, F. R. On the variation in bottom fauna and fish yield in relation to trophic level and lake dimensions. J. Fish. Res. Bd. Can., **14** : 1-32 6 figs.

Haysom, N. M. Notes on some Queens-land fishes. Ichthyol. Notes Qd. **1** : 139-144, 2 figs.

Hazelwood, A. Pisces. Naturalist No. 860 : 10.

Healey, E. G. *see* Brown, M. E.

Healy, A. (1). A specimen of tench, *Tinca tinca*, L., from Lough Lein, Killarney. Irish Nats' J. **12** 1956 : 109.

Healy, A. (2). Fishes of Lough Rea, Co. Galway, Ireland. II. Pike and rudd with general conclusions. Salm. Trout Mag. No. 151 1956 : 246-252.

Healy, A. (3). Fishes of Lough Rea, Co. Galway, Ireland. I. Trout and perch. *Salm. Trout. Mag.* No. 150 : 107-116.

Healy, A. (4). Brown trout of the Fergus system, County Clare, Ireland. *Salm. Trout. Mag.* No. 151 : 193-198 2 figs.

Heck, L. Über den Gabelbart (*Osteoglossum bicirrhosum* Vandelli). *Aquar. Terrar. Z.* 10 : 121-122, fig.

Hedgpeth, J. W. Treatise on marine ecology and paleoecology Vol. 1, Ecology. *Mem. geol. Soc. Amer.* 67 : 1-1296, figs.

Heide, S. van der. In W. J. Jongmans & S. van der Heide. Flore et faune du Carbonifère inférieur de l'Égypte. *Med. Geol. Sticht., N.S.* 8 1955 : 73-75 pl. xvii.

Hemens, J. *see* Alabaster, J. S.

Hemming, F. Proposed validation under the plenary powers of *Osmerus* (Class Actinopterygii) as of subgeneric status as from Linnaeus, 1758 (proposed validation of an erroneous entry on the *Official List of Generic names in Zoology* made by the ruling given in Opinion 77. *Bull. zool. Nom.* 11 1955 : 281-282.

Hempel, G. Ökologische Studien zum tagesrhythmischen Verhalten von Meeresfischen. *Verh. dtsch. zool. Ges.* 1956 : 415-421 3 figs.

Hemphill, A. F. The southern red-belly dace, *Chrosomus erythrogaster erythrogaster* from the lower Mississippi river drainage. *Copeia* 1957 : 53.

Hemphill, A. F. *see* Cooper, L. B.

Henderson, G. T. D. The distribution of young *Gadus poutassou* (Risso). *Bull. mar. Ecol.* 4 : 179-202 5 figs.

Hennemuth, R. C. An analysis of methods of sampling to determine the size composition of commercial landings of Yellowfin Tuna (*Neothunnus macrop-terus*) and Skipjack (*Katsuwonus pelamis*). *Bull. Inter-Amer. Tuna Comm.* 2 : 174-243.

Henriques da Silva, G. La Faune Miocène de l'Île du Prince. *Mem. Mus. min. geol. Univ. Coimbra* 42 1956 : 29-53, 7 pls.

Hepburn, R. L. *see* Pitt, T. K.

Herald, E. S. The reported emergence of fishes from California's subterranean waters. *Calif. Fish Game* 43 : 235-237, 1 fig.

Herbert, D. W. M. *see* Alabaster, J. S.

Herbst, H. V. Bauchflossenlose Hechte. *Gewässer u. Abwässer* No. 8 : 77 1 fig.

Hersey, J. B. *see* Johnson, H. R.

Heuts, M. J. *see* Meuwis, A. L.

Hibiya, T. *see* Oguri, M.

Hill, R. N. Victory over the shark. *Nat. Hist. N.Y.* 65 1956 : 352-356.

Hoar, W. S. *see* Brown, M. E.

Hodgson, W. C. The herring and its fishery. London, (Routledge & Kegan Paul) pp. xiii + 197 9 pls. 24 figs.

Hoedeman, J. J. (1). Die bisher beschriebenen Formen und Arten der Gattung *Rivulus* Poey. *Aquar. Terrar. Z.* 7 1956 : 199-202 8 figs.

Hoedeman, J. J. (2). *Hypheosobrycon griemi*, eine farbenprächtige Neuheit der *bifasciatus*-Gruppe aus Gojas. *Aquar. Terrar. Z.* 10 : 87-89 2 figs.

Hoedeman, J. J. (3). Le statut du genre *Barbus* Cuvier et Cloquet 1816. *L'Aquar. et les poissons* 6 No. 3 1956 : 13-16.

Hoedeman, J. J. (4). Notes on the ichthyology of Surinam (Dutch Guiana) 4. Additional records of Siluriform fishes. *Beaufortia* 6 No. 71 : 147-160 31 figs.

Hoedeman, J. J. (5). The status of the Callichthyid genus *Cascadura* Ellis, 1913 (Pisces-Siluriformes-Callichthyidae). *Bull. aquat. Biol.* 1 : 15-19 2 figs.

Hoehne, K. Fischschuppen im Vitrit unterrotliegender Steinkohlenflöze von Stockheim im Oberfranken und Manebach in Thüringen. *Geologie* 6 : 528-540 8 pls.

Hoffmann, J. Notizen und Bemerkungen zu dem Begriff der Haxl (*Squalius leuciscus* L.). *Bull. Soc. Nat. luxemb.* 59 1955 : 171-184 2 figs.

Holstvoogd, C. The post embryonic development of the pronephros in *Clupea harengus* L. *Arch. néerl. Zool.* 12 (3) : 455-466, 1 pl. 7 figs.

Honma, Y. (1). [On the pituitary gland of a northern Japanese blenny, *Stichaeus grigorjewi* Herzenstein.] *Jap. J. Ichthyol.* 5 : 93-98 2 figs. [English summary.]

Honma, Y. (2). [On the pituitary gland of some Japanese elasmobranchiate fishes.] Jap. J. Ichthyol. **5**: 107-113 12 figs. [English summary.]

Honma, Y. (3). [On the pituitary gland of some Japanese teleosts.] Jap. J. Ichthyol. **5**: 175-181 11 figs. [English summary.]

Honma, Y. (4). [A case of the Janus monstrosity found in the chum salmon embryo.] Jap. J. Ichthyol. **5**: 182 2 figs. [In Japanese.]

Horstmann, E. Familien-und Kernspezifische Synapsenformen bei Teleostern. Progress in Neurobiology, London etc. 1956: 26-33 5 figs.

Houdemer, F. E. (1). Liste commentée des poissons de mer observés à Ajaccio. Bull. Soc. hist. Corse 1949: —?. [Not seen.]

Houdemer, F. E. (2). Notes complémentaires sur quelques poissons observés en Corse. Cah. Nat. Bull. N.P. (N.S.) **8** 1953: 83.

Huang, W. Early Pleistocene fish remains from Sanmen Area, Honan. Vertebrata Palasiatica **1**: 313-319 figs. [In Chinese with English summary p. 319.]

Hubbs, C. (1). Distributional patterns of Texas freshwater fishes. Southwestern Nat. **2**: 89-104 2 figs.

Hubbs, C. (2). A check-list of Texas fresh-water fishes. Texas Game Fish Comm. Ser. 1F No. 3: 1-11.

Hubbs, C. (3). Duration of sperm viability as a factor in frequency of fish hybridization. Texas J. Sci. **9**: 472-474.

Hubbs, C. (4). *Gambusia heterochir*, a new Poeciliid fish from Texas, with an account of its hybridization with *G. affinis*. Tulane Stud. Zool. **5** No. 1: 1-16 7 figs.

Hubbs, C. & Brown, W. H. *Dionda diaboli* (Cyprinidae), a new minnow from Texas. Southwestern Nat. **1** 1956 [1957]: 69-77 4 figs.

Hubbs, C. & Kemp, R. J. Three shiners, *Notropis ortenburgeri*, *N. maculatus* and *N. blennius*, added to the known East Texas fauna. Texas J. Sci. **8** 1956: 110-112.

Hubbs, C. & Reynolds, R. A. Copulatory function of the modified pectoral fin of Gambusiin fishes. Amer. Nat. **91**: 333-335.

Hubbs, C. & Springer, V. G. A revision of the *Gambusia nobilis* species group, with descriptions of three new species, and notes on their variation, ecology and evolution. Texas J. Sci. **9**: 279-327 15 figs.

Hubbs, C. & Strawn, K. (1). The effects of light and temperature on the fecundity of the greenthroat darter, *Etheostoma lepidum*. Ecology **38**: 596-602 2 figs.

Hubbs, C. & Strawn, K. (2). Relative variability of hybrids between the darters, *Etheostoma spectabile* and *Percina caprodes*. Evolution **11**: 1-10 2 figs.

Hubbs, C. & Strawn, K. (3). Survival of F1 hybrids between fishes of the subfamily Etheostominae. J. exp. Zool. **134**: 33-62.

Hubbs, C. see Warburton, B.

Humm, D. G., Clark, E. E. & Humm, J. H. Transplantation of melanomas from platyfish-swordtail hybrids into embryos of swordtails, platyfish and their hybrids. J. exp. Biol. **34**: 518-528 2 pls. 1 fig.

Huzum, I. V. Consideratiuni asupra unei diformitati la aripioarele pectorale dela Pastruga si Nisetru. (*Acipenser stellatus* Pall.) si (*Acipenser guldenstaedti* Brandt). Bul. Soc. Nat. Român. No. 15 1941: 30-33 3 figs.

(Ignatyeva, G. M.) (1). [Morphophysiological studies of the hatching gland in *Huso huso* (L.). C.R. Acad. Sci. URSS **114**: 908-911 3 figs. [In Russian.]

(Ignatyeva, G. M.) (2). [Morphophysiological studies of the hatching gland in *Acipenser stellatus* at different incubation temperatures.] C.R. Acad. Sci. URSS **114**: 1132-1135 2 figs. [In Russian.]

Ikehara, I. I. see King, J. E.

(Ilyin, B. S.) (1). [Remarks on and alterations to the Gobioidi in L. S. Berg's Freshwater fishes of the USSR and adjacent countries. Ed. 4 1948-1949 pp. 1055-1125.] Ichth. Prob. Moscow **7** 1956: 185-192. [In Russian.]

(Ilyin, B. S.) (2). [*Gobius* (*Macrogobius*) *paganellus* in Black Sea.] Ichth. Probl. Moscow, **8** : 25-27 fig. [In Russian.]

Imamura, T. & Hashitani, S. On the food habits of four fishes in Marsh Hinuma. Bull. Fac. Lib. Arts. Ibaraki Univ. Nat. Sci. No. 7 : 45-56. [English summary.]

Inger, R. F. Report on a collection of marine fishes from North Borneo. Fieldiana, Zool. **36** : 341-405 2 figs.

Inger, R. F. *see* Woods, L. P.

(Irkinovich, A. I. & Zelenin, A. M.). [Histological changes occurring in the pituitary body in the process of sexual maturation of *Cyprinus carpio*.] C.R. Acad. Sci. URSS **114** : 655-657 pl. [In Russian.]

Ishida, J. *Salvelinus* in southern Saghalién. Zool. Mag., Tokyo **54** 1942 : 431-438 2 pls.

Ishida, J. & Taguchi, S. Effect of 2, 4-Dinitrophenol and sodium azide on lactic acid production during early development of the teleost *Oryzias latipes*. Annot. zool. jap. **30** : 1-7.

Ishii, S. Seasonal changes in the ovary and testis of the viviparous teleost, *Ditrema temminckii*. Annot. zool. Jap. **30** : 204-210 8 figs

Ishii, S., & Egami, N. Effect of testosterone on dorsal fin of the file fish, *Monacanthus cirrhifer*. Annot. zool. Jap. **30** : 77-82 13 figs.

Ito, T. *see* Yoshida, H.

(Ivanova, M. N.) [Some data on the food of perch in the Volga delta.] Ichth. Probl. Moscow **7** 1956 : 96-106 5 figs. [In Russian.]

(Ivanova, S. A.) [Histological study of gonads of gorbusha and summer keta salmon.] Ichth. Probl. Moscow **6** 1956 : 96-99 3 pls. [In Russian.]

Ivasik, V. M. & Roi, P. E. Expériences pour engrayer l'hydropisie de la carpe dans les fermes piscicoles des régions à l'ouest de la R.S.S. Ukraine. Bul. Inst. Cercet. Pisc. Roman. **16** No. 2 : 61-68. [French summary.]

(Izhevski, G. K.) [Methods and ways of developing research on exploration and behaviour of fishes.] Trud. Sovesh. Ikhtiol. Komm. **5** 1953 [1955] : 8-11 [In Russian.]

Jakowska, S. *see* Nigrelli, R. F.

James, W. W. A further study of dentine. Trans. Zool. Soc. Lond. **29** : 1-45 10 pls. 4 figs.

Jarvik, E. Crossopterygierna och de forsta fyrfota djuren. Svensk Faunistik Revy **1955** No. 3 : 80-96 7 figs.

Jászfalusi, L. Descrierea limnobiologică piscicolă a Mureşculin între hotarele Comunei Godea şi a pâraielor din împrejurii. Notul. biol. Bucureşti **5** 1947 : 287-321 3 pls. 2 figs. map.

Jayaram, K. C. Nomenclatural status of the names *Bagre* Cuvier (Oken), *Bagrus* Valenciennes and *Porcus* Geoffroy St. Hilaire. Copeia **1956** No. 4 [1957] : 248-249.

Jean, Y. Présence de larves de *Sebastes marinus* dans la Baie-des-Chaleurs et leurs caractères distinctifs. Nat. canad. **82** 1955 : 33-43 2 figs.

Jensen, P. T. An extension of the range of the long-finned smelt. Calif. Fish Game **43** : 99 1 fig.

Jhingran, V. G. Age determination of the Indian major carp *Cirrhina mrigala* (Ham.) by means of scales. Nature London **179** : 468-469 text-figs. 1 and 2.

Jitariu, P. *see* Branzei, P.

Joensen, J. S. Merking av toski vestan fyr Suduroy i 1952. Fróska-parrit **5** 1956 : 85-97 8 maps. [English summary.]

John, K. R. Observations on the behavior of blind and blinded fishes. Copeia **1957** : 123-132, 4 figs.

Johnson, H. R., and others. Suspended echo sounder and camera studies of midwater sound scatterers. Deep Sea Res. **3** 1956 : 266-272.

Johnson, R. C. *see* Welander, A. D.

Johnson, W. E. On the distribution of young sockeye salmon (*Oncorhynchus nerka*) in Babine and Nilkitkwa Lakes, B.C. J. Fish. Res. Bd. Can. **13** 1956 : 695-708.

Jones, F. R. H. Rotation experiments with blind goldfish. J. exp. Biol. **34** : 259-275 8 figs.

Jones, F. R. H. *see* Brown, M. E.

Jones, R. W. Char. Fishing Gazette (Beckenham, England) **139** : 1122.

Jónsson, J. Er Ysan stadbundin i Faxaflóa? Aegir **49** 1956 : [1-2.] [English summary.]

Jubb, R. A. The freshwater eel *Anguilla obscura* Gunther, 1871, in Southern Africa. Nature, Lond. **180** : 1216.

Judefind, T. F. *see* Kawabata, T.

Julin, E. Vanliga havsnålens förekomst i Bottenhavet. Fauna och Flora No. 3 1956 : 140-144 2 figs.

June, F. C. *see* Yuen, H. S. H.

Junker, M. Vitamin A in Fischen, Krebsen und Muscheln. Arch. Fisch. Wiss. **7** : 248-260.

Kafuku, T. [Ecological and phyletic significance of anal fin between cypriids and catostomid fish.] Jap. J. Ichthyol. **5** : 163-173. 6 figs. [English summary.]

Kähling, J. *see* Thines, G.

Kähsbauer, P. Viktor Pietschmann. Ann. naturh. Mus. Wien **61** : 1-3 ports.

Kakimoto, D. [Studies on B-vitamins of pyloric coeca of Skipjack, *Katsuwonus vagans* IV. On vitamin B12.] Bull. Jap. Soc. Sci. Fish. **22** : 634-636. [English summary.]

Kakimoto, D., & others. [Amino acid composition of the pyloric coeca of skipjack, *Katsuwonus vagans*.] Bull. Jap. Soc. Sci. Fish. **22** : 631-633. [English summary.]

Kamer, J. C. van de. The pineal organ in fish and amphibia. Progress in Neurobiology, London, N.Y. 1956 : 113-120 5 figs.

Kamohara, T. (1). On the fishes of the family Chlorophthalmidae. Res. Rep. Kôchi Univ. **5** No. 15 1956 : 1-8 3 pls. [English summary.]

Kamohara, T. (2). Notes on twenty additions to the marine fish fauna of Prov. Tosa, Japan, including one new genus (family Peristediidae). Res. Rep. Kôchi Univ. **6** No. 5 : 1-6 1 fig.

Kamohara, T. (3). List of fishes from Amami-Oshima and adjacent regions, Kagashima Prefecture, Japan. Rep. Usa mar. Biol. Sta. **4** : 1-65 38 figs.

Kampa, E. M. & Boden, B. P. Light generation in a sonic-scattering layer. Deep Sea Res. **4** : 73-92 8 figs.

(Kanaeva, I. P.) [Daily changes in feeding of *Percarina demidoffi maeotica*.] Ichth. Probl., Moscow **7** 1956 : 52-59 8 fig. [In Russian.]

Kanazawa, A. *see* Kakimoto, D.

Kanazawa, R. H. A new species of eel, *Coloconger meadi*, and new records for the atelepid fish, *Ijimaia antillarum* Howell Rivero, both from the Gulf of Mexico. Copeia **1957** : 234-235 1 fig.

Kano, Y. & Yamamoto, T. S. Removal of the membrane of the dog salmon egg by means of proteolytic enzymes. Bull. Jap. Soc. sci. Fish. **23** : 166-172, 3 figs.

Kanwisher, J. & Ebeling, A. Composition of the swim-bladder gas in bathypelagic fishes. Deep Sea Res. **4** : 211-217 2 figs.

Kao, C. Y., Chambers, R. & E. L. Internal hydrostatic pressure of the *Fundulus* egg. II. Permeability of the chorion. J. cell. comp. Physiol. **44** 1954 : 447-461 2 figs.

Kapoor, A. S. Sensory canals of the head in *Wallagonia attu* (Day). Experimentia **13** : 459-460 1 fig.

Kapoor, B. G. (1). Secretory cells in the gills of an Indian fresh-water spiny eel, *Mastacembelus armatus* (Lacép.). Jap. J. Ichthyol. **5** : 123-126 1 fig.

Kapoor, B. G. (2). Oral valves of teleosts. Jap. J. Ichthyol. **5** : 127-131 7 figs.

Kapoor, B. G. (3). Pharyngeal pockets of *Gadusia chapra* (Ham). Jap. J. Ichthyol. **5** : 132-135 2 figs.

Kapoor, B. G. (4). The callous pad of the pharyngeal masticatory apparatus in Indian carps. Jap. J. Ichthyol. **6** : 26-30 2 pls.

Kapoor, B. G. *see* Sarkar, H. L.

Kappers, J. A. On the problem of the presence of a paraphysis cerebri in selachians. Pubbl. Staz. zool. Napoli **29** : 41-70 4 pls.

Karapetkova, M. S. *see* Martino, C. V.

(Karpevich, A. F.) [Method of prognosis of food level and conditions of fish feeding in changing water reservoir conditions.] Trud. Sovesh. Ikhtiol. Komm. **5** 1954 (1955) : 85-92. [In Russian.]

(Karzinkin, G. S. & Krivobok, M. N.) [Method of studying the physiology of nutrition and food requirements of fish.] Trud. Sovesh. Ikhtiol. Komm. **6** 1954 (1955) : 40-53 6 figs. [In Russian.]

Kasahara, S. Notes on the young of the Black Porgy, *Mylio latus* (Houttuin). Jap. J. Ichthyol. **6** : 20-25 3 figs. [English summary.]

Kashiwada, K. *see* Kakimoto, D.

Kawabata, T., Halstead, B. W. and Judefind, T. F. A report of a series of recent outbreaks of unusual cephalopod and fish intoxications in Japan. Amer. J. trop. Med. Hygiene **6** : 935-939.

Kemp, R. J. Occurrence of the ocean sunfish *Mola mola* (Linnaeus) in Texas. Copeia **1957** : 250-251.

Kemp, R. J. *see* Hubbs, C.

Kennedy, H. D. *see* Nielson, R. S.

Kessler, R. Heredozelluläre Strahlenschäden im Hoden des Zahnkarpfens *Lebistes reticulatus*. Naturwissenschaften **44** : 19-20 2 figs.

Ketchen, K. S. Factors influencing the survival of the lemon sole (*Parophrys vetulus*) in Hecate Strait, British Columbia. J. Fish. Res. Bd. Can. **13** 1956 : 647-694.

Keynes, R. D. *see* Brown, M. E.

Khabakov, A. V. (1). Pisces section in Atlas of the leading forms of the fossil fauna of the USSR, Vol. 4, Lower Carboniferous, 1941. [Omitted from previous record.]

[Khabakov, A. V.] (2). [O dvukh novykh formakh problematicheskikh iskopaemuikh *Crookallia* iz karbona donetzkogho bassina i *Palaeoxyris* iz yurui Kruima.] Ann. Soc. paléont russe **13** 1949 : 83-87 figs.

Kilby, J. D. & Caldwell, D. K. A list of fishes from the southern tip of the Florida Peninsula. Quart. J. Fla. Acad. Sci. **18** 1955 : 195-206 1 fig.

Kimsey, J. B. (1). The status of the redeye bass in California. Calif. Fish Game **43** : 99-100.

Kimsey, J. B. (2). Large mouth bass tagging at Clear Lake, Lake County, California. Calif. Fish Game **43** : 111-118.

King, J. E. & Ikehara, I. I. Comparative study of food of big-eye and yellowfin tuna in the central Pacific. Fish. Bull. U.S. **57** 1956 : 59-85.

(Kirpichnikov, V. S., Svetovidov, A. N. & Troshin, A. S.) [The labelling of *Cyprinus carpio* with phosphorous and calcium radioactive isotopes.] C.R. Acad. Sci. URSS **111** 1956 : 221-224 4 graphs. [In Russian.]

(Kirshenblat, Y. D.) [The action of purified hormones of the pituitary body upon fish ovary.] C.R. Acad. Sci. URSS **111** 1956 : 504-506. [In Russian.]

Klausewitz, W. (1). *Botia modesta*, *Botia lecontei* und *Botia horae*. Aquar. Terrar. Z. **10** : 33-35, 3 text-figs.

Klausewitz, W. (2). Roloff's Zwergbarbe (*Puntius roloffi*), eine neue Art. Aquar. Terrar. Z. **10** : 89-90 1 fig.

Klausewitz, W. (3). Eine neue Kugelfisch-Art aus Siam: *Tetraodon somphongsi*. Aquar. Terrar. Z. **10** : 115-116 figs. 1-2.

Klausewitz, W. (4). Nachtrag zu *Botia modesta* und *lecontei*. Aquar. Terrar. Z. **10** : 184.

Klausewitz, W. (5). Die Lohachata-Schmerle (*Botia lohachata*) eine interessante Neueinführung aus Pakistan. Aquar. Terrar. Z. **10** : 201-203, text-figs. 1-5.

Klausewitz, W. (6). Feuerfische der Gattungen *Dendrochirus* und *Pterois*. Aquar. Terrar. Z. **10** : 319-323 2 figs.

Klausewitz, W. (7). *Anisochaetodon* (*Linophora*) *pictus* Forskål eine gute Art der Borstenzähner (Pisces, Chaetodontidae.) Bull. aquat. Biol. **1** : 1-12 2 figs.

Klausewitz, W. (8). Über einige Fische aus Thailand. Senckenbergiana, Biol. **38** : 33-39 4 figs.

Klausewitz, W. (9). Neue Süßwasserfische aus Thailand. Senckenbergiana, Biol. **38** : 193-204 3 pls. 5 figs.

Klausewitz, W. (10). *Tetraodon somphongsi* n.sp. ein weiterer neuer Kugelfisch aus Thailand (Pisces, Tetraodontidae). Senckenbergiana, Biol. **38** : 205-208 2 figs.

Klausewitz, W. (11). *Barbus schnee-manni* und *Aplocheilichthys maculatus*, zwei neue Fische aus Ost-Afrika (Pisces, Cyprinidae und Cyprinodontidae.) Senckenbergiana Biol. **38** : 279-282 2 figs.

Kleerekoper, H. & Sibakin, K. An investigation of the electrical "spike" potentials produced by the sea lamprey (*Petromyzon marinus*) in the water surrounding the head region. II. J. Fish. Res. Bd. Can., **14** : 145-151 3 figs.

Klyuchareva, O. A.) [On some problems regarding intraspecific relationships in fishes.] Zool. Zh., Moscow **35** 1956 : 275-289. [In Russian.]

Koefoed, E. Notes on the Greenland shark *Acanthorhinus carcharias* (Gunn.) 2. A uterine foetus and the uterus from a Greenland shark. Fiskeridir, Skr. Havundersøk. **11** No. 10 : 8-12 5 figs.

Koenig, O. Erfahrungen mit Korallenfischen. Aquar. Terrar. Z. **10** : 154-156.

(Kokhanova, N. A.). (Development of *Cobitis taenia*.) Ichthyol. Problems, Moscow **8** : 89-101 4 figs. [In Russian.]

(Kokhiya, A. B.) (1). [Food of some fishes in Khramsk water reservoir and adjoining rivers.] Trud. Inst. Zool. Tiflis **13** 1954 : 179-195. [Gruzian with Russian summary.]

(Kokhiya, A. B.) (2). [The food of fish in the basin of the river Rioni.] Trud. Inst. Zool. Tiflis **15** 1956 : 261-287. [In Gruzian with Russian summary.]

Koli, L. Kirjoevasimpeon (*Cottus poecilopus* Heck. esüntymisestä Suomesa. Luonnon Tutkuja **60** : 152-154 2 figs.

(Konstantinov, V. G.) [Comparative morphology and biology of *Perca fluviatilis*, *Perca schrenki* and *Lucioperca lucioperca* in different stages of development.] Trud. Inst. Morf. Zhiv. **16** : 181-236 10 figs. [In Russian.]

Konta, J. Crystal orientation of two phosphates in the scales of Permian Fish of the group Palaeoniscidae. Act. Geol., Budapest, **4** : 1956 : 113-121 6 text-figs.

(Koryakov, E. A.) [Certain ecological adaptations in the reproduction of *Comephoridae*.] C.R. Acad. Sci. URSS **111** 1956 : 1111-1114 2 graphs. [In Russian.]

Koster, W. J. Guide to the fishes of New Mexico. Albuquerque (University of New Mexico Press), pp. vii + 116 : text-figs.

Kosto, B. see Pickford, G. E.

Kotthaus, A. Die deutschen Schollenuntersuchungen von 1948-1954. Ber. dtsh. Komm. Meeresforsch. **14** 1956 : 83-108 11 figs.

Kotthaus, A. & Krefft, G. Fisch-faunenliste der Fahrten mit F.F.S. "Anton Dohrn" nach Island-Grönland. Ber. Dtsch. Wiss. Komm. Meeresforsch. **14** : 169-191.

(Kozhin, N. I.) [Fish-fauna of the Iranian shores of the Caspian Sea.] Ichthyol. Problems, Moscow **8** : 8-18. [In Russian.]

(Kozlov, V. V.) [The asphyxiation of fishes in Oka river.] Zool. Zh., Moscow **35** 1956 : 936-937. [In Russian.]

(Kozlovski, D. A.) [On the migratory instinct in fishes.] Zool. Zh., Moscow **35** 1956 : 266-274. [In Russian.]

Krayukhin, B. V. see Bodrova, N. V.

Krebs, W. see Sauerteig, E.

Krefft, G. Ein Beitrag zur Kenntnis des Gronlandrochens, *Raja spinicarda* Jensen 1914. Arch. Fisch. Wiss. **7** 1956 : 139-145 2 figs.

Krefft, G. see Kotthaus, A.

Kristensen, I. Koornaarvissen (*Atherina presbyter*) langs en Nederlandse kust. Levende Nat. **60** : 159-162 2 figs.

Krivobok, M. N. see Karzinkin, G. S.

(Krizhanovski, S. G.) (1). [Development of herring in water of high salinity.] Ichthyol. Problems Moscow **6** 1956 : 100-104 2 figs. [In Russian.]

(Krizhanovski, S. G.) (2). [Parthenogenetic development in Sakhalin herring, found in the spawning material of 1955.] Ichthyol. Problems, Moscow **8** : 81-88. [In Russian.]

(Krogus, F. V. & Krokhin, E. M.) [Results of biological investigations on red-nerka salmon, and the fluctuations of stock in Kamchatka waters.] Ichthyol. Problems, Moscow **7** 1956 : 3-20 5 figs. [In Russian.]

Krokhin, E. M. see Krogus, F. V.

Kruckow, T. Die stratigraphische und paläogeographische Bedeutung der miozänen Elasmobranchier-Fauna von Baja California, Mexico. Neues Jb. Geol. Paläont. B. **1957** : 444-449.

(**Kruglova, V. M.**) [Feeding grounds of bottom feeding fishes in Vesselovsk reservoir and the reason for slow growth of carp.] Ichthyol. Problems, Moscow **8** : 116-128. [In Russian.]

Krumholz, L. A. (1). A record of the night shark, *Hypoprion signatus*, from Bimini, Bahamas. Copeia **1957** : 300-301.

Krumholz, L. A. (2). Measurements of a large sharp-nose mackerel shark, *Isurus oxyrinchus*, from Bimini, Bahamas. Copeia **1957** : 302.

Kubota, S. S. see Okada, Y.

Kubota, Z., & others. [Influence of pH and agricultural chemicals on the loach, *Misgurnus anguillicaudatus* (Cantor)]. J. Shimonoseki Coll. Fish. **6** : 327-336. [English summary.]

(**Kudrin, L. N.**) [O nakhodkakh zubov akul v otlozheniyakh miotzena yugho-zapadnoi okrainui russkoi platformui.] Geol. Sbornik **4** : 349.

Kuenzer, P. Brutpflege beider Elterntiere bei *Nannacara anomala*. Aquar. Terrar. Z. **10** : 175-177 text-figs. 1-4.

Kulczycki, J. Upper Devonian fishes from the Holy Cross Mountains (Poland). Acta palaeont. polon. **2** : 285-382 13 pls. figs.

Kurazhskovskii, Y. N. see Pidoplichko, I. G.

(**Kurilov, S. V.**) [The sturgeons in Pechora river.] Priroda **3** : 116-117. [In Russian.]

Kuriyama, Z. see Kubota, Z.

Kuroda, N. (1). [On the life colors of some fishes. V.] Jap. J. Ichthyol. **5** : 118-122 2 figs. [English summary.]

Kuroda, N. (2). Additions and corrections to the fishes of Suruga Bay (XIII). Zool. Mag., Tokyo **66** : 1-2. [English summary.]

Kuroda, N. (3). A list of the fishes of Nabuto, Boshu, Japan. Zool. Mag., Tokyo **66** : 3-5 2 figs. [English summary.]

Kuronuma, K. & Yamaguchi, M. Descriptions of a new iniomid fish from Choshi, Japan. Zool. Mag., Tokyo **53** 1941 : 272-274.

Kusa, M. Osmotic behaviour of the isolated cortical alveoli of stickleback eggs. Annot. Zool. Jap. **30** : 67-70 1 fig.

Kuthalingam, M. D. K. Observations on the food and feeding habits of the Indian Mackerel *Rastrelliger kanagurta* (Russel). J. zool. Soc. India **8** 1956 : 99-106.

Kutkuhn, J. H. Food and feeding habits of some fishes in a dredged Iowa lake. Proc. Iowa Acad. Sci. **62** 1955 : 576-588.

Kuwabara, S. Acetylcholine (ACI) cycle in the electric organ of fish. J. Shimonoseki Coll. Fish. **6** : 149-240 12 figs.

(**Kuznetsov, V. V.**) [On the so called phenomenon of Lee.] Ichthyol. Problems, Moscow **8** : 143-154. [In Russian.]

Ladiges, W. Über einige Farbabweichungen bei Fischen. Aquar. Terrar. Z. **10** : 153-156 text-figs. 1-3.

La Faunce, D. A. see Hallock, R. J.

Lagler, K. F. & Steinmetz, C. Characteristics and fertility of experimentally produced sunfish hybrids, *Lepomis gibbosus* × *L. macrochirus*. Copeia **1957** : 290-292.

Lagunov, I. I. see Azbelev, V. V.

Lambert, J. G. Sur deux Eleotridae d'eau douce de Guinée Française, avec une révision du genre *Kribia*, Herre. Rev. Zool. Bot. afr., **56** : 101-110 2 figs.

Lange, N. O. see Vasnetzov, V. V.

Lanzing, W. J. R. Biologie van de Petromyzonidae. Vakbl. Biol. **37** : 133-142 1 fig.

Lapparent, A. F. de. Étude paléontologique des vertébrés du Jurassique d'El Mers (Moyen Atlas). Notes Serv. Min. Maroc **124** 1955 : 1-36, 5 pls. figs. [Pisces p. 10.]

Larimore, R. W. Ecological life history of the warmouth (Centrarchidae). Bull. Ill. nat. Hist. Surv. **27** : 1-83 1 pl. 27 figs.

Larkin, P. A., Terpenning, J. G. and Parker, R. R. Size as a determinant of growth rate in rainbow trout, *Salmo gairdneri*. Trans. Amer. Fish. Soc. **86** (1956) 1957: 84-96, 19 text-figs., 3 tables.

Lauer, C. Y. *see* Prosser, C. L.

Laurent, P. *see* Couteaux, R.

Lauzier, L. *see* Leim, A. H.

Lawrence, J. M. A trapping experiment to estimate the bluegill population in a farm pond. Proc. Iowa Acad. Sci. **59** 1952: 475-479.

Leary, T. R. (1). An occurrence of the parrotfish, *Sparisoma radians*, in a Texas bay. Copeia **1956** No. 4 [1957]: 249-250.

Leary, T. R. (2). The bonefish, *Albula vulpes* in Texas. Copeia **1957**: 248-249.

Lecal, J. Recherches expérimentales sur les blennidés de Castiglione. Bull. biol. **91**: 115-157.

Le Danois, E. & others. Fishes of the world, London (G. G. Harrop) pp. 190 15 pls. col., text illust.

Lee, A. British fishery research in the Barents Sea. Polar Rec. **8** 1956: 109-117 3 figs.

Legaspi, V. A. A contribution to the life history of the nomeid fish *Psenes cyanophrys* Cuvier and Valenciennes. Bull. mar. Sci. Gulf & Caribbean **6** 1956: 179-199 5 figs.

Legeza, M. I. *see* Lindberg, G. U.

Leghissa, S. Contribution ultérieure à une meilleure connaissance de l'appareil de Mauthner chez les poissons et observations sur la morphologie de la fibre. Progress in Neurobiology, London etc. 1956: 45-62 6 figs.

Lehman, J.-P. (1). L'Evolution des Dipneustes et l'origine des Urodèles. Colloques Internat., Centre nat. Recherches Sci., Paris, **60** 1956: 69-76.

Lehman, J.-P. (2). Compléments à l'étude des genres *Ecrinesomus* et *Bobasatrania* de l'Eotrias de Madagascar. Ann. Paléont., Paris **42** 1957 (1956): 65-94 6 text-figs pls. 5-13.

Lehman, J.-P. (3). Un problème non résolu: l'origine des Vertébrés. La Nature No. 3265: 174-7 4 figs.

Leim, A. H. & others. Report of the Atlantic herring Investigation Committee. Bull. Fish. Res. Bd. Can. No. 111: 1-317.

Leiner, M. Stichlingsbastarde. Natur u. Volk **87**: 294-300 5 figs.

Lemasson, M. J. Second symposium on African Hydrobiology and inland fisheries. C.S.A. Brazzaville No. 25 1956: 1-268 tabs.

Leonte, V. Contributions à l'étude de la biologie des esturgeons marins de la république populaire Roumaine. Anal. Inst. Cerc. pisc. Romane N.S. **1** 1956: 167-185.

Leonte, V. *see* Teodorescu-Leonte, R.

Le Touzé, S. *see* Barents, A.

Lévêque, R. Notes sur la faune ichthyologique de Camargue. Terre et la Vie **104**: 231-240 map.

Lieder, U. Die Ergebnisse der im Jahre 1956 durchgeführten Karpfen-Karauschenkreuzungen. 1. Beitrag zur Anwendung der 'entfernten' Hybridisation in der Fischzüchtung. Z. Fisch. **6**: 283-299, 7 figs.

Lillelund, K. & Tiews, K. Die Dokumentation in der Fischereiliteratur und die Möglichkeit ihrer praktischen Verwirklichung. Arch. Fisch. Wiss. **7**: 129-138.

(Lindberg, G. U. & Legeza, M. I.) [On the two forms of the spiny dogfish *Squalus acanthias* L.] Zool. Zh., Moscow **35** 1956: 1685-1688 2 figs. [Russian with English summary.]

Lindroth, A. (1) A study of the whitefish (*Coregonus*) of the Sundsvall Bay district. Rep. Inst. Freshwater Res. Drottningholm, No. 38: 70-108 8 figs.

Lindroth, A. (2). Baltic salmon fluctuations: a reply. Rep. Inst. Freshwater Res. Drottningholm, No. 38: 109-130 3 figs.

Lindsey, C. C. Possible effects of water diversions on fish distribution in British Columbia. J. Fish. Res. Bd. Can. **14**: 651-668 2 figs.

Liu, H. T. (1). Fossil fishes from Locality 14 of Choukontien. Palaeont. sinica N.S.C. **14**, 1954: 1-21 8 pls. figs.

[Liu, H.-T.] (2). [A new fossil Cyprinid fish from Maoming, Kwangtung.] Vertebrata Palasiatica **1**: 151-153 1 pl. [English summary p. 153.]

Liu, H. & Yeh, S. Two new species of *Ceratodus* from Szechuan, China. *Vertebrata Palasiatica* **1** : 305-311 1 pl. [In Chinese with English summary p. 310.]

Liu, T. S. A new Cretaceous Palaeoniscoid fish from the Yumen of the Chiu-chuan Basin, Western Kansu. *Vertebrata Palasiatica* **1** : 103-122 pls. i-vi 2 figs.

(Lobintzev, K. S.) [A contribution to the problem of tonic and untonic muscle fibres.] *C.R. Acad. Sci. U.R.S.S.* **112** : 1116-1118 2 figs. [In Russian.]

Locke, A. Beyond the National Park. *Angling in Malaya* **4** 1956 : 61-67.

Lockley, A. S. Adrenal cortical hormones and osmotic stress in three species of fishes. *Copeia* **1957** : 241-242.

Lofts, B. & Marshall, A. J. Cyclical changes in the distribution of the testis lipids of a teleost fish, *Esox lucius*. *Quart. J. micr. Sci.* **98** : 79-88 2 pls. 1 fig.

Lopez, R. B. *Pez aguja Scomberesox saurus* (Walbaum) pescado en Necochea. *Notas Mus. Univ. nac. La Plata* **19** : 145-151 8 figs.

Lopez, R. B. *see* Carlo, J. M.

Love, R. M. *see* Brown, M. E.

Lowe, R. H. Observations on the diagnosis and biology of *Tilapia leucosticta* Trewavas in East Africa. *Rev. Zool. Bot. afr.* **55** : 353-373.

Lowenstein, O. *see* Brown, M. E.

Lubet, P. *see* Bauchot, M. L.

Lühmann, M. & Mann, H. Beobachtungen über die Blumenkohlkrankheit der Aale. *Arch. Fisch. Wiss.* **7** : 229-239 9 figs.

Lüling, K. H. *Caecobarbus geertsi* Boulenger—seine Entdeckung, Verbreitung und Lebensweise—und nochmals *Anoptichthys jordani* Hubbs und Innes. *Aquar. Terrar. Z.* **10** : 145-150 text-figs. 1-5.

Luscan, S. *see* Busnita, T.

Lyll, A. H. (1). The growth of the trout retina. *Quart. J. micr. Sci.* **98** : 101-110 2 pls. 7 figs.

Lyll, A. H. (2). Cone arrangements in teleost retinae. *Quart. J. micr. Sci.* **98** : 189-201 8 figs.

(Lyubitskaya, A. I.) [Influence of different parts of the visible spectrum region on the developmental stages of embryos and larvae of fish.] *Zool. Zh., Moscow* **35** 1956 : 1873-1886 6 figs. [Russian with English summary.]

McMynn, R. G. *see* Vernon, E. H.

Maes, H. *see* Bont, A. F. de.

Magnússon, J. (1). Mikroskopisch-anatomische Untersuchungen zur Fortpflanzungsbiologie des Rotbarsches (*Sebastes marinus* Linné). *Z. Zellforsch.* **43** 1955 : 121-167 24 figs.

Magnússon, J. (2). Fiskimidaleit med b. v. Fylki. *Aegir* **49** 1956 : 235-240 3 figs. [English summary.]

Magnússon, J. (3). Fiskimidaleit med b. v. Fylki. *Aegir* **49** 1956 : 281-283 1 fig. [English summary.]

(Makkoveeva, I. I.) [The food of young pike in Rybinsk reservoir.] *Ichthyol. Problems Moscow* **7** 1956 : 60-95 12 figs. [In Russian.]

Maldacea, L., Citterio, P. & Ranzi, S. Sulla presenza di actina e miosina nell'organo elettrico della torpedine. *R.C. Ist. lombardo Cl. Sci. mat. e nat.* **90** 1956 : 512

Maldacea, L. *see* Citterio, P.

Malyarevskaya, A. Y. *see* Bodrova, N. V.

Manacop, P. R. *see* Capco, S. R.

Manea, G. I. & Mihai, M. Premières expériences de reproduction artificielle des Esturgeons de la Roumaine (Résultats préliminaires obtenus en printemps 1955 et 1956). *Bul. Inst. Cercet. Pisc. Roman.* **16** (1) : 57-72.

Manea, G. *see* Busnita, T.

Mann, H. *see* Lühmann, M.

Marathe, V. B. & Bal, D. V. The chondrocranium of *Eleutheronema tetradactylum* (Shaw). *J. zool. Soc. India* **8** 1956 : 107-118 7 figs.

Marine Biological Association of the U.K. Plymouth Marine Fauna, Edit. 3, Plymouth (Mar. Biol. Assoc.) 1957.

Marshall, A. J. *see* Lofts, B.

Marshall, J. R. The lateral musculature and the swimming of fish. *Proc. zool. Soc. Lond.* **126** 1956 : 127-143 9 figs.

Marshall, N. B. (1). Evolutionary aspects of fish classification. Baer, J. G. First Symposium on host specificity among parasites of vertebrates, Neuchâtel Univ., : 173-184 3 figs.

Marshall, N. B. (2). Tiefseebiologie, Jena (Gustav Fischer) pp. viii + 334, 5 pls. col., 103 figs.

Marshall, T. C. Ichthyological Notes. Ichthyol. Notes Qd. 1 : 117-137 1 pl.

Martino, C. V. & Karapetkova, M. S. Étude quantitative des relations nutritives chez les poissons. Zool. Zh., Moscow 36 : 425-431. [French summary.]

Maruyama, K. Rare 'deep-water fishes from off Tohoku and adjacent regions. II. Record of a rare species of the genus *Melamphaes* (family Melamphaidae). Jap. J. Ichthyol. 6 : 31-34 1 fig. [English summary.]

Massmann, W. H. New and recent records for fishes in Chesapeake Bay. Copeia 1957 : 156-157.

Massonet, R. see Grangaud, R.

Massuti, M. O. Biología de la sardina de Baleares. Bol. Inst. esp. Oceanogr. No. 80 1956 : 1-21 14 figs.

Matei, D. see Busnita, T.

Mather, F. J. & Gibbs, R. H. Distributional records of fishes from waters off New England and the middle Atlantic states. Copeia 1957 : 242-244.

Matta, F. L'accrescimento del merluzzo del Mediterraneo. Boll. Pesca Piscic. Idrobiol. 32 fasc. 1 1956 [1957] : 31-35.

Maul, G. E. Further additions to the previously revised family Searsidae. Bol. Mus. Funchal No. 10 : 5-21 5 figs.

Maurice, A. see Cordier, D.

Maxunov, V. A. Certain data on morphology and biology of *Capoetobrama kuschakewitschi* (Kessler) of the river Syr-Darva. Zool. Zh., Moscow 36 : 238-245. [English summary.]

Mayhew, J. (1). The bluegill, *Lepomis macrochirus* (Rafinesque) in West Okoboji Lake, Iowa. Proc. Iowa Acad. Sci. 63 1956 : 705-713 2 figs.

Mayhew, J. (2). The occurrence of blindness in the black bullhead, *Ictalurus melas* (Rafinesque), of East Okoboji Lake, Iowa. Proc. Iowa Acad. Sci. 64 : 654-656.

Mazumdar, S. R. On the spawning habits and early development of *Wallagonia attu* (Bloch and Schneider). Proc. zool. Soc. India 10 : 99-104 1 pl.

Mead, G. W. (1). An Atlantic record of the zeoid fish *Parazen pacificus*. Copeia 1957 : 235-237 1 pl.

Mead, G. W. (2). On the bramid fishes of the Gulf of Mexico. Zoologica, N.Y. 42 : 51-61 3 pl.

Mead, G. W. see Bohlke, J.

Medcof, J. C. Nuptial or pre-nuptial behaviour of the shad, *Alosa sapidissima* (Wilson). Copeia 1957 : 252-253.

Medcof, J. C. see Canagaratnam, P.

Medcof, J. C. see Sivalingam, S.

(**Mednikov, B. M. & Prokhorov, V. G.**) [A new species of *Cyclopteropsis* (Pisces Cyclopterinae) from the Bering Sea.] C.R. Acad. Sci. URSS 111 1956 : 717-719 fig. [In Russian.]

Meinken, H. (1). Über zwei der Liebhaberei bislang unbekannte *Corydoras*-Neuheiten (Callichthyidae—Ostariophysi). Aquar. Terrar. Z. 10 : 4-7 1 fig.

Meinken, H. (2). *Rasbora nigromarginata* n. spec., die "Rote Rasbora". Aquar. Terrar. Z. 10 : 65-68 2 figs.

Meinken, H. (3). *Moenkhausia sanctae filomenae* (Steindachner) 1907, die Rotaugen-Moenkhausia. Aquar. Terrar. Z. 10 : 141-143, fig.

Meinken, H. (4). Wieder einmal die *Barbus—Puntius*—Frage. Aquar. Terrar. Z. 10 : 180-184, text-figs. 1-3.

(**Mekhanik, F. Y.**) [The growth and metabolism of the fry of Ladoga salmon and trout at various temperatures.] Zool. Zh., Moscow 35 1956 : 290-299 2 graphs. [In Russian.]

(**Melnikov, G. B.**) [Trial of introducing bream in Khristoforov water reservoir (Kpivorozhye).] Trud. Gidrobiol. Obshch. 7 1956 : 209-215. [In Russian.]

Menzel, H.-U. & Steffens, W. Über das Wachstum von Spiegel und Nachtkarpfen. Z. Fisch. 6 : 385-392 4 figs.

Merkel, T. J. Food habits of the king salmon, *Oncorhynchus tshawytscha* (Walbaum), in the vicinity of San Francisco, California. Calif. Fish Game 43 : 249-270 4 figs.

Merkens, J. C. & Downing, K. M. The effect of tension of dissolved oxygen on the toxicity of un-ionized ammonia to several species of fish. *Ann. appl. Biol.* **45** : 521-527 4 figs.

Merkens, J. C. *see* Downing, K. M.

Meuwis, A. L. & Heuts, M. J. Temperature dependence of breathing rate in carp. *Biol. Bull. Woods Hole* **112** : 97-107.

Meyer-Waarden, P. F. & Rübenberg, L. Untersuchungen über den verwertbaren Fleischanteil und Fettgehalt bei Ostseeflundern. *Arch. Fisch. Wiss.* **7** : 240-247.

Miegel, H. (1). Fischerei und Fische in den Trinkwassertalsperren im Einzugsgebiet der Wupper. *Gewässer u. Abwässer No. 7* 1955 : 39-71 2 maps.

Miegel, H. (2). Beschreibung der Talsperrenform eines Cypriniden aus der Abramisgruppe. *Gewässer u. Abwässer No. 13* 1956 : 7-22 13 figs.

Migdalski, E. C. Contribution to the life history of the South American fish *Arapaima gigas*. *Copeia* **1957** : 54-56.

Mihai, M. *see* Manea, G. I.

Miller, H. W. *Petalodus jowettii*, a new species of fossil Bradyodont fish from Kansas. *Trans. Kansas Acad. Sci.* **60** : 82-85 2 figs.

Miller, H. W. and Swineford, A. Paleocology of nodulose zone at top of Haskell Limestone (Upper Pennsylvanian) in Kansas. *Bull. Amer. Ass. Petrol. Geol.* **41** : 2012-2036 3 pls. figs.

Miller, R. B. (1). Permanence and size of home territory in stream-dwelling cutthroat trout. *J. Fish. Res. Bd. Can.*, **14** : 687-691.

Miller, R. B. (2). Have the genetic patterns of fishes been altered by introductions or by selective fishing? *J. Fish. Res. Bd. Canada* **14** : 797-806.

Miller, R. R. (1). The scientific name of the Australian lungfish. *Turtlex News* **32** 1954 : 69.

Miller, R. R. (2). Fishes from Laguna Ocotil. *Bull. Mus. Comp. Zool. Harv.* **116** : 238-241.

Miller, R. R. (3). Utilization of X-rays as a tool in systematic zoology. *Syst. Zool.* **6** : 29-40.

Miller, R. R. (4). Origin and dispersal of the alewife, *Alosa pseudoharengus*, and the gizzard shad, *Dorosoma cepedianum*, in the Great Lakes. *Trans. Amer. Fish. Soc.* **86** (1956) : 97-111.

Miller, R. R. *see* Robins, C. R.

Millot, J. *see* Le Danois, E.

Milne, D. J. Recent British Columbia spring and coho salmon tagging experiments, and a comparison with those conducted from 1925 to 1930. *Bull. Fish. Res. Bd. Can. No. 113* : 1-56 13 figs.

(Milokhin, A. A.) (1). [Relationship between the structure of the digestive tract nervous system and the kind of food in some Cyprinidae.] *C.R. Acad. Sci. URSS* **105** 1955 : 182-184 4 figs. [In Russian.]

(Milokhin, A. A.) (2). [On a new plexus discovered in the digestive tube of *Perca fluviatilis*.] *C.R. Acad. Sci. URSS* **110** 1956 : 1100-1102 2 figs. [In Russian.]

Mircea, M. *see* Gyrko, S.

Mironova, N. V. (1). [Nourishment and size of young cod-fish in the littoral zone of the eastern Murman.] *Moscow*, 1956, pp. 100.

(Mironova, N. V.) (2). [Remarks on the biology and fishery of the coal-fish (*Pollachius virens* L.) in the Barents Sea.] *Ichth. Probl. Moscow* **8** : 155-159 4 figs. [In Russian.]

Mišik, V. Biometrik des Frauenfisches aus der Donau *Rutilus pigus* (Lacépède 1804) *virgo* (Heckel 1852). *Biológia, Bratislava* **12** : 177-190 1 fig. [German summary.]

Mitani, F. [Correlation between catches of fishing grounds and secular variation in the catch of the yellowtail, *Seriola quinqueradiata*, along the Pacific coast of Japan.] *Bull. Jap. Soc. Sci. Fish.* **22** : 605-608. [English summary.]

Moatu, J. P. *see* Grangaud, R.

Maen, T. Food of the freshwater drum, *Aplodinotus grunniens* Rafinesque, in four Dickinson County, Iowa, lakes. *Proc. Iowa Acad. Sci.* **62** 1955 : 589-598.

Mohr, E. Vliegende Vissen, Amsterdam (Uitgeverij Breughel) [1955] pp. 63 50 figs.

Mohr, J. L., Wilimovsky, N. J. & Dawson, E. Y. An arctic Alaskan kelp bed. *Arctic* **10** : 45-52 2 text-figs.

Mohsen, T. Etude morphologique des éléments du système suspensorial dans une souche particulière de *Lebistes reticulatus* R. *Proc. Egypt. Acad. Sci.* **11** 1955 (1956) : 67-73 3 figs.

(Moiseev, P. A.) (1). [Peculiarities of population dynamics of the commercial fauna in the north-western part of the Pacific, and the causes of these peculiarities.] *Zool. Zh., Moscow* **35** 1956 : 1601-1607. [Russian with English summary.]

(Moiseev, P. A.) (2). [*Oncorhynchus masu* morpho *formosanus* (Jordan et Oshima) as a non-migratory form in the basin of the river Sedanka.] *C.R. Acad. Sci. URSS* **112** : 163-164. [In Russian.]

Moldenhauer, D. Ein Beitrag zur Systematik der Gattung *Acanthophtalmus*. *Aquar. Terrar. Z.* **10** : 119-121 6 figs.

Monod, T. *see* Le Danois, E.

Montalban, H. R. *see* Blanco, G. J.

Montalban, H. R. *see* Rabanal, H. R.

Monteiro, R. Contribuição para o estudo da biologia do Clupeidae de Angola. 1—*Sardinella aurita* C. & V. *An. Jta Inv. Ultramar, Lisbon* **9** No. 2 1956 : 151-177 6 figs.

Moody, H. L. A fisheries study of Lake Panasoffku, Florida. *Quart. J. Fla. Acad. Sci.* **20** : 21-88.

Moorman, R. B. *see* Carlander, K. D.

Morawa, F. W. F. Die Verteilung des Fettes bei einigen Plattfischen (Flunder, Kliesche und Heilbutt). *Z. Fisch.* **5** : 269-273 1 fig.

Mori, H. Regeneration des Schwanzes und der Schwanzflosse bei der Knochenfische (*Oryzias latipes*). *Zool. Mag., Tokyo* **54** 1942 : 119-124 1 pl. 8 figs.

Mori, K. *see* Okada, Y.

Mori, S. *see* Yanagashima, S.

Mori, T. A new species and a new subspecies of Cyprinidae from North China. *Zool. Mag., Tokyo* **53** 1941 : 182-184 2 figs.

Mori, T. *see* Saiki, M.

Morovic, D. Jadranski Mugilidi (Cipli, Skocci) sa bibliografijom Mugilida. Les muges de l'Adriatique avec la bibliographie des muges. Zagreb (Hrvatska Seijacka Tiskara) : 1-22 26 figs.

(Morozova, T. A.) [Biology and systematics of the Pacific lamprey.] *Ichth. Probl. Moscow* **7** 1956 : 149-157 5 figs. [In Russian.]

(Morozova, T. E.) [The role of external and internal factors in the sex cycle of *Perca fluviatilis* L. *C.R. Acad. Sci. U.R.S.S.* **112** : 1129-1132. [In Russian.]

Morris, R. Some aspects of the structure and cytology of the gills of *Lamprolaima fluviatilis*. *Quart. J. micr. Sci.* **98** : 473-485 6 figs.

Morris, R. W. Some aspects of the problem of rearing marine fishes. *Bull. Inst. océanogr. Monaco* No. 1082 1956 : 1-61 9 figs.

Morrow, J. E. (1). Fish records from Long Island Sound. *Copeia*, **1957** : 240-241.

Morrow, J. E. (2). A redefinition of the subspecies of *Fodiator acutus*. *Postilla* No. 29 : 1-10 1 fig.

(Moskalenko, B. K.) [On the influence of several years' fluctuations of the water level in the Ob river on the fecundity and reproduction of certain fishes.] *Zool. Zh., Moscow* **35** 1956 : 746-752. [Russian with English summary.]

Motais, R. (1). Modifications de l'halotropisme et de l'euryhalinité de la jeune anguille sous l'action d'une hormone corticosurrénale. *Bull. Inst. océanogr. Monaco* No. 1078 1956 : 1-14 9 figs.

Motais, R. (2). Sur l'absorption de la lumière par le cristallin de quelques poissons de grande profondeur. *Bull. Inst. océanogr. Monaco* No. 1074 : 1956 1-4.

Motais, R. *see* Fontaine, M.

Mott, J. C. *see* Brown, M. E.

Moulton, J. M. A collection of drawings of fishes ascribed to J. P. Kirtland (1793-1877) in the library of Bowdoin College. *Breviora* No. 80 : 1-4 3 figs.

Moustafa, Y. S. Siluroid fish remains from near Wadi Hoff. Egypt. *Bull. Inst. Desert Egypt* **3** 1953 : 141-142

(Movchan, V. A. & Yarmoshenko, N. P.) [The eminent Russian pisciculturist O. A. Grimm and his role in the development of Russian fish breeding and fish farming.] Zool. Zh., Moscow 35 1956 : 1370-1378 port. [Russian with English summary.]

Muller, T. see Acolat, L.

Munro, I. S. R. (1). Handbook of Australian fishes. Nos. 1-7; 14. Fish. Newsl. 10 No. 7 : 13-20 figs.; 15 Nos. 8-12 1956 : 15-18 figs.; 16 No. 1 : 15-18 figs.; No. 8 : 15-18 figs.

Munro, I. S. R. (2). Occurrence of the big-eyed tuna, *Parathunnus mebachii* (Kishinouye) in Queensland. Ichthyol. Notes Qd. 1 : 145-148 1 fig.

Munteanu, I. see Teodorescu-Leonte, R.

Munthe, H. On the development of the Baltic herring in the light of the Late-Quaternary history of the Baltic. Ark. Zool. Stockholm, (4) 9 4 1956 : 333-341.

(Murina, V. V.) [The food of eel in Kournian and Vistula bays of the Baltic.] Trud. Ghidrobiol. Obshch. 7 1956 : 148-162 6 fig. [In Russian.]

Murray, R. W. Evidence for a mechanoreceptive function of the ampullae of Lorenzini. Nature, London 179 : 106-7 figs. 1 & 2.

Musacchia, X. J. & Clark, M. R. Effects of elevated temperatures on tissue chemistry of the arctic sculpin, *Myoxocephalus quadricornis*. Physiol. Zool. 30 : 12-17.

Musacchia, X. J. & others. A comparison of liver and muscle lipids in Arctic fishes. Copeia 1957 : 10-12.

Muzinic, R. Sur la croissance de la jeune sardine (*Sardina pilchardus* Walb.) dans les eaux de Split. Notes Inst. oceanogr. Split. No. 12 : 1-4.

Myers, G. S. Annual fishes. Aquarium J. 23 1952 : 125-141 figs.

Myers, G. S. & Storey, M. H. Curatorial practices in zoological research collections. 2. System followed in filing specimens of recent fishes in the Natural History Museum of the Stanford University. Circ. nat. Hist. Mus. Stanf. Univ. No. 6 1956 : 1-44.

Nalbandoğlu, U. Über einen Bastard zwischen *Rutilus rutilus* and *Chalcaburnus chalcoides*. Hidrobiologi, Istanbul 4: 70-75 3 figs.

Nalbant, T. (1). Contributions à l'étude de la faune ichtyologique de la Dimbovita inférieure. Anal. Inst. Cerc. pisc. Romane N.S. 1 1956 : 345-359 figs. pls. [French summary.]

Nalbant, T. (2). *Cobitis aurata vallachica*, eine neue Unterart des Balkan-steinpeitzgers (Pisces, Cobitidae). Senckenbergiana biol. 38 : 209-212 3 figs.

Nalbant, T. see Banarescu, P.

Navarro, O. B. see Sulet, J. I.

Nedelea, M. see Busnita, T.

(Neifakh, A. A.) (1). [The change in X-ray sensitivity during fertilization in *Misgurnus fossilis*.] C.R. Acad. Sci. URSS 109 1956 : 943-946 3 graphs. [In Russian.]

(Neifakh, A. A.) (2). [The influence of ionizing radiation upon the egg cells of *Misgurnus fossilis*.] C.R. Acad. Sci. URSS 111 1956 : 585-588 2 figs. [In Russian.]

Nelson, E. M. An early review article on the swim bladder of fishes. Copeia 1957 : 301-302.

Newell, B. S. see Williams, F.

Newth, D. R. On the neural crest of the lamprey embryo. J. Embryol. exp. Morph. 4 1956 : 358-375 2 pls. 12 text-figs.

Nicol, J. A. C. Observations on photophores and luminescence in the teleost *Porichthys*. Quart. J. micr. Sci. 93 : 179-188 5 figs.

Nicolae, I. & Cautis, I. Observations sur le comportement du chinchard (*Trachurus trachurus mediterraneus* Stdr.) au littoral Romain de la Mer Noire — en 1953-1955. Anal. Inst. Cerc. pisc. Romane N.S. 1 1956 : 207-226.

Nicolau, A. see Vasiliu, G. D.

Nielsen, E. Notes on Triassic Fishes from Madagascar. Medd. Dansk Geol. Foren., 12 1955 : 563-578 11 text-figs.

Nielson, R. S. & others. A six-year study of the survival and vitality of hatchery reared rainbow trout of catchable size in Convict Creek, California. Calif. Fish Game 43 No. 1 : 5-42.

Nieuwenhuizen, A. van den. Remarkable behaviour of *Aphyosemion bivittatum*. Aquarium Philad. **26** : 312-315 8 figs.

Nigrelli, R. F., Jakowska, S. & Baker, H. A bacterial disease of cichlids in captivity. Aquarium Philad. **26** : 233-235 3 figs.

(Nikolski, G. V.) (1). [The biological significance of fish schooling.] Trud. Soresh. Ikhtiol. Komm **5** 1953 [1955] : 104-116. [In Russian.]

(Nikolski, G. V.) (2). [Some facts on the marine period of life of the Pacific lamprey (*Lampetra japonica*). Zool. Zh., Moscow **35** 1956 : 588-591 Pl. [In Russian.]

(Nikolski, G. V.) (3). [Ichthyological investigations in Chinese Republic.] Zool. Zh., Moscow **35** 1956 : 1747-1765 8 figs. [In Russian.]

(Nikonorov, I. V.) [Observations on behaviour of Caspian sprat]. Ichth. Probl., Moscow **6** 1956 : 21-36 10 figs. [In Russian.]

Nilsson, N.-A. On the feeding habits of trout in a stream of Northern Sweden. Rep. Inst. Freshwater Res. Drottningholm, No. 38 : 154-166 6 figs.

Nishikawa, S. Histological observation on the spermatogenetic cycle of a conger eel, *Muraenesox cinereus* (Forsk.). J. Shimonoseki Coll. Fish. **6** : 281-284, 8 figs. [English summary.]

Noble, E. R. Seasonal variations in host parasite relations between fish and their Protozoa. J. mar. biol. Ass. U.K. **36** : 143-155 1 fig.

Nogusa, S. [A study of chromosomes in two species of hagfishes (Eptatretidae-Cyclostomata)]. Zool. Mag. Tokyo **66** : 307-309. 4 figs. [English summary.]

Norris, K. S. Second record of the green sturgeon in southern California. Calif. Fish Game **43** : 317.

(Novikova, N. S.) [Behaviour of roach on its feeding grounds in the northern Caspian Sea.] Ichth. Probl., Moscow **7** 1956 : 36-51 3 figs. [In Russian.]

Nybelin, O. Deep-sea bottom fishes. Rep. Swed. Deep-Sea Exped. 1947-48 **2** Zool. 3 : 247-345 7 pls., 50 figs.

[Obruchev, D. V.] (1). In Atlas of the guide forms of the fossil faunas of the USSR **3** 1947 : 1-245, 56 pls. figs. Leningrad.

Obruchev, D. V. (2). [Review of L. S. Berg's "Classification of Agnatha and Fishes, recent and fossil," 2nd Edit.] Zool. Zh. Acad. Sci. U.R.S.S. **36** : 300-305. [In Russian.]

Ochiai, A. Zoogeographical studies on the soleoid fishes found in Japan and its neighbouring regions. I, II and III. Bull. Jap. Soc. sci. Fish. **22** : 522-535 1 fig. [English summary.]

Odiorne, J. M. see Brown, M. E.

Oguri, M., & Hibiya, T. (1). [Studies on the adrenal glands of teleosts—I. Some observations from the viewpoint of comparative histology.] Bull. Jap. Soc. sci. Fish. **22** : 621-625 2 figs. 1 pl. [English summary.]

Oguri, M. and Hibiya, T. (2). Studies on the adrenal gland of Teleosts. II. On the adrenal tissues in 15 species of fishes. Bull. Jap. Soc. sci. Fish. **23** : 144-149 3 figs.

Ohno, S. see Saiki, M.

Okada, Y. [Introduction of *Ophiocephalus* to Japan.] Jap. J. Ichthyol. **5** : 174. [In Japanese.]

Okada, Y. & Kubota, S. S. (1). Studies on the fish fauna at the southern vicinity of Tsu City, Mie Prefecture. Rep. Fac. Fish. Univ. Mie **2** 1956 : 205-216 2 pls. 1 fig.

Okada, Y., & Kubota, S. S. (2). Description of a new fresh-water catfish, *Coreobagrus ichikawai*, with an emendation of the genus *Coreobagrus* Mori. Jap. J. Ichthyol. **5** : 143-145 1 fig.

Okada, Y. & Mori, K. [Ecological study of *Salangichthys microdon* in breeding season.] Jap. J. Ichthyol. **5** : 99-106 2 figs. [English summary.]

Okada, Y. & Suzuki, K. Ecological studies of the Ma-anago, *Astroconger myriaster* (Brevoort). I. Notes on the composition of total length, the relationship between total length and body weight and the condition factor in Ise Bay, Mie Prefecture. Rep. Fac. Fish. Univ. Mie **2** : 217-226 4 figs.

(Olifan, V. I.) [On the 24 hour rhythm of Baikal grayling fry and on the 24 hour rhythm in fish fry in general]. C.R. Acad. Sci. URSS **114** : 669-672 fig. [In Russian.]

Oliva, O. (1). Příspěvek k posnání rybi fauny Bečvy. Přírod. Sborn. Ostravsk. Kraje **13** 1952 : 193-203.

Oliva, O. (2). Some experiments with the use of fish poisons during fish population studies. Acta Soc. zool. Bohemoslovenicae **21** : 363-375.

Oliva, O. & Frank, S. Species composition, abundance and growth of fish population in the reinforced concrete basin in Prague. Univ. Carolina Biologica (Prague) **3** : 1-6.

Olivereau, M. (1). Hypophyse et gland thyroïde chez les poissons. Année biol. (3) **30** 1954 : 63-80.

Olivereau, M. (2). Radiothyroïdectomie chez l'anguille (*Anguilla anguilla* L.). Arch. Anat. micr. Morph. exp. **46** : 39-59 9 figs.

Olson, P. R. see Donaldson, L. R.

Olsson, R. An experimental breakage of Reissner's fibre in the central canal of the pike (*Esox lucius*). Z. Zellforsch. **46** : 12-17.

Olsson, R. see Afzelius, B. A.

Oosten, J. van see Brown, M. E.

Opalatenko, L. K. see Balabai, P. P.

Oren, O. H. Changes in temperature of the Eastern Mediterranean Sea in relation to the catch of the Israel Trawl Fishery during the years 1954-55 and 1955-56. Bull. Inst. océanogr. Monaco No. 1102 : 1-15 tables.

Orska, J. The influence of temperature on the development of the skeleton in teleosts. Zool. Polon. **7** : 272-325 3 pls.

Orton, G. L. Embryology and evolution of the pelagic fish egg. Copeia **1957** : 56-58.

Ørvig, T. (1). Remarks on the vertebrate fauna of the Lower Upper Devonian of Escuminac Bay, P.Q., Canada, with special reference to the Porolepiform Crossopterygians. Ark. Zool. **10** : 367-426 13 figs.

Ørvig, T. (2). Paleohistological notes. 1. On the structure of the bone tissue in the scales of certain *Palaeonisciformes*. Ark. Zool. **10** : 481-490 4 figs.

Ørvig, T. (3). Notes on some Paleozoic lower vertebrates from Spitsbergen and North America. Norsk geol. Tidsskr. **37** : 285-353, 5 pls. figs.

Oshima, M. (1). Notes on the bottom-fishes obtained at off-shores of Niigata and Yamagata Prefectures, with descriptions of five new species. Jap. J. Ichthyol. **6** : 1-8 5 figs.

Oshima, M. (2). List of the freshwater fishes obtained in the south-eastern Kiushiu. Jap. J. Ichthyol. **6** : 9-13.

Oshima, M. (3). Notes on the fishes collected in the down stream of Tama River, with descriptions of two new species. Jap. J. Ichthyol. **6** : 14-19 2 figs.

Oshima, M. (4). Studies on the distribution of freshwater salmon *Onco-rhynchus masou* (Brevoort) and *Onco-rhynchus rhodurus* Jordan & McGregor, found in the streams of Kiushiu. Zool. Mag. Tokyo **66** : 21-24 2 figs. [English summary.]

Otsu, T. & Yoshida, H. O. Another record of the rare shark, *Euprotomiscus bispinatus*, from the Pacific Ocean. Copeia **1957** : 58.

Ovsyannikov, N. S. see Borisov, P. G.

Owen, D. M. see Johnson, H. R.

Padua, E. & others. Uova, larve e stadi giovanili di Teleostei. Fauna e Flora Neapel **38** Pt. 3 1956 : 457-1064 16 pls.

Papp, A. & Thenius, E. Vösendorf—ein Lebensbild aus dem Pannon des Wiener Beckens. Mitt. Geol. Gesell. Wien **46** Sonderband 1954 : 1-109 14 pls.

Parker, R. R. see Larkin, P. A.

Parrott, A. W. Sea anglers' fishes of New Zealand. London (Hodder & Stoughton) pp. 176 8 pls. text-figs.

Paulian, P. La pêche autour des îles St. Paul et Amsterdam. Terre et la Vie **104** : 267-282 3 figs.

(Pavlov, P. I.) [Comparison between Danube and Dnieper bream]. Zool. Zh., Moscow **35** 1956 : 891-896 fig. [Russian with English summary.]

Pera, L. Contributo alla morfologia ed allo sviluppo della ghiandola digitiforme dei plagiostomi. Marit. Zool. Ital., Suppl. **65** : 385-386.

Perruche, L. La pêche électrique en eau douce. *Nature*, Paris No. 3263 : 88-90 4 figs.

Peters, A. J. Bibliography of published work bearing on the natural history of the Seychelles and neighbouring archipelagoes. *J. Soc. bibl. nat. Hist.* 3 : 238-262.

Peters, H. M. Über die Regulation der Gelegegrösse bei Fischen. *Z. Naturf.* 12B : 255-261 1 pl., 5 figs.

(Petrova, V. G.) [A cytochemical study of egg-cells in the fish]. *C.R. Acad. Sci. URSS* 110 1956 : 674-676 2 fig. [In Russian.]

Pew, P. Occurrence of young dolphin, *Coryphaena hippurus* in a Texas bay. *Copeia* 1957 : 300.

Peyer, B. Über die morphologische Deutung der Flossenstacheln einiger Haifische. *Mitt. Naturf. Ges. Bern N.F.* 14 : 159-176 10 pls. 7 text figs.

Phillips, C. A South Florida record for the stingray, *Dasyatis centroura*. *Copeia* 1956 No. 4 [1957] : 249.

Pickford, G. E. (1). The response of hypophysectomized male killifish to purified fish growth hormone, as compared with the response to purified beef growth hormone. *Endocrinology* 55 1954 : 274-287.

Pickford, G. E. (2). The response of hypophysectomized male killifish to prolonged treatment with small doses of thyrotropin. *Endocrinology* 55 1954 : 589-592.

Pickford, G. E. & Kosto, B. Hormonal induction of melanogenesis in hypophysectomized killifish (*Fundulus heteroclitus*). *Endocrinology* 61 : 177-196.

Pickford, G. E. *see* Atz, E. H.

Pickford, G. E. *see* Bondy, P. K.

Picos, C. A. Recherches sur l'action dynamique spécifique des protéines chez la carpe. *Anal. Inst. Cerc. pisc. Romane N.S.* 1 1956 : 373-384.

Picos, C. A. & Todicescu, S. L'Influence de la température sur le métabolisme énergétique global de la carpe. *Ann. Univ. "C. J. Parhon" București, Ser. Sti. Nat.* No. 9 1956 : 153-158. [French summary.]

(Pidoplichko I. G. & Kurazhskovski, Y. N.) [Palaeogeographic importance of Dipnoi. *Trav. Mus. zool. Acad. Sci. Ukr.* 27 1956 : 144-153. [In Ukrainian with Russian summary.]

Pihlgren, A. M. *see* Suomalainen, P.

Pillsbury, R. W. Avoidance of poisonous eggs of the marine fish. *Scorpaenichthys marmoratus* by predators. *Copeia*, 1957 : 251-252.

Pinc, R. D. *see* Prosser, C. L.

Pinter, H. Grossflosser. *Aquar. Terrar. Z.* 10 : 169-172, 1 colour-plate and text-figs. 1-5.

Pinto, S. Y. (1). Um novo Clinidae da Ilha da Trindade, Brasil. *Bol. Mus. nac. Rio de J., (Zool.)* No. 163 : 1-15 12 figs.

Pinto, S. Y. (2). Sobre a validade do gênero *Parablennius* Ribeiro, 1915 (Blenniidae, Perciformes, Actinopteri-gii). *Rev. Bras. biol.* 17 : 413-420 3 figs.

Pinto, S. Y. *see* Travassos, H.

Pitt, T. K. & others. Temperature selection of the carp (*Cyprinus carpio* Linn.). *Canad. J. Zool.* 34 1956 : 555-557.

Pliszka, F. Importance of the aquatic animals as a food base of fish after Polish investigation. *Polsk. Arch. Hydrobiol.* 3 1956 : 429-458.

Poczeko, P. (1). An outline of fishery conditions in the Vistula river near Torun in 1952-1954. *Rocz. Nauk. Rolnic.* 70B 1955 : 107-120 1 fig. [English summary.]

Poczeko, P. (2). The population of bream (*Abramis brama* L.) in the Vistula in the neighbourhood of Torun. *Zeoz. Nauk. Univ. M. Kopernika. Biol.* No. 1 1956 : 165-185 5 figs. [English summary.]

Poersch, L. Der kleine (gelbe) Kongosalmler (*Petersius caudalis*). *Aquar. Terrar. Z.* 10 : 172-175.

(Polenov, A. L.) [Content and distribution of nucleic acids in neurosecretory cells of the diencephalon in Teleostei]. *C.R. Acad. Sci. U.R.S.S.* 112 : 1122-1125 Pl. [In Russian.]

Politis, J. (1). Recherches cytologiques sur la formation du pigment mélanique chez certains poissons. *C.R. Acad. Sci. Paris* 243 1956 : 1559-1560.

Politis, J. (2). Recherches cytologiques sur la formation des caroténoïdes chez certains poissons. C.R. Acad. Sci. Paris **244** : 511-513 2 figs.

Poll, M. (1). L'état actuel de nos connaissances sur la faune ichthyologique du Congo Belge. C.R. IIIe Congr. nat. Sci. Brux. **8** [1950] : 43-46.

Poll, M. (2). Ecologie des poissons du Lac Tanganika. Int. Congr. Zool. **14** 1953 (1956) : 465-468.

Poll, M. (3). Redescription du *Gymnallabes tihoni* Poll 1944, Clariidae microphthalmes du Stanley-Pool (Congo Belge). Rev. Zool. Bot. afr. **55** : 237-248 10 figs.

Poll, M. see Brien, P.

Pollingher, U. see Santa, V.

Popescu, E. see Popescu-Gorj, A.

Popescu, L. see Teodorescu-Leonte, R.

Popescu-Gorj, A. & others. Recherches hydrobiologiques-piscicoles dans le complexe des lacs Borcea-de-Jos. Anal. Inst. Cerc. pisc. Romane N.S. **1** 1956 : 123-166.

Popescu-Gorj, A. see Busnita, T.

Pora, E. A. & others. La nourriture du chinchard (*Trachurus trachurus mediterraneus* Sldr.) durant une saison de pêche (Mai-Octobre 1953). Anal. Inst. Cerc. pisc. Romane N.S. **1** 1956 : 187-206.

Porumb, I. & Fl. see Pora, E. A.

Postel, E. (1). Note succincte sur quelques Espadons tunisiens. Bull. Mus. Hist. nat. Paris (2) **28** : 509-511.

Postel, E. (2). Une nouvelle station a *Hemichromis bimaculatus* en Afrique du Nord: La Mare de Kébili en Tunisie. Bull. Mus. Hist. nat. Paris (2) **29** : 143-144 map.

(Povlovski, E. N.) [Structure of fish brain in connection with their mode of life.] Trud. Sovesh. Ikhtiol. Komm. **5** 1953 [1955] 76-77. [In Russian.]

(Privolnev, T. I.) [Reaction of fishes to light]. Ichth. Probl., Moscow **6** : 1956 : 3-20 5 figs. [In Russian.]

Prokhorov, V. G. see Mednikov, B. M.

Prosser, C. L. & others. Acclimation of goldfish to low concentrations of oxygen. Physiol. Zool. **30** : 137-141.

Pynnönen, A. Über die Reichlichkeit der Fische und Reptilien im Kirchspiel Konnoveu einst und jetzt. Arch. Soc. zool.-bot. Vanamo **11** : 171-182.

Qasim, S. Z. The biology of *Blennius pholis* L. (Teleostei). Proc. zool. Soc. Lond. **128** : 161-208 13 figs 1 pl.

Quaghebeur, M. Onderzoek over de reductie van de ogen, van de oogkas en van het tectum opticum bij blinde grotvissen. Catholic Univ. Louvain : 1-120 27 figs. [In Flemish.]

Quartier, A. Sur la présence de *Leucaspius delineatus* Heckel dans le lac de Neuchâtel. Bull. Soc. neuchâtel. Sci. nat. (3) **78** 1955 : 31-32.

Querner, H. Über einen Zusammenhang zwischen der Beeinflussbarkeit der Gonaden durch Sexualhormone und dem Modus der Geschlechtsbestimmung. Verh. deuts. zool. Ges. **1956** : 194-197.

Querrière, F. de la see Fontaine, M.

Rabanal, H. R., Montalban, H. R. & Villaluz, D. K. The preparation and management of Baños fishpond nursery in the Philippines. Philipp. J. Fish. **1** 1951 : 1-34 10 pls. 8 figs.

Rabeu, V. von. Vom Leben und Wandern des Aales. Kosmos, Stuttgart **48** 1952 : 506-510 3 figs.

Radulescu, I. & Vasiliu-Suceveanu, N. Contributions à la connaissance des parasites des poissons du complexe lagunaire Razelm-Sinoe. Anal. Inst. Cerc. pisc. Romane N.S. **1** 1956 : 309-333.

Rae, B. B. & Wilson, E. Rare and exotic fishes recorded in Scotland during 1954 and 1955. Scot. Nat. **68** 1956 : 23-38; 92-109.

Rae, B. B. see Stephen, A. C.

Raffy, A. see Fontaine, M.

Rageau, J. see Gail, R.

Rahn, J. Beitrag zur Altersbestimmung an Aalen. Z. Fisch. **6** : 393-396 2 figs.

Ramaswami, L. S. & Sundararaj, B. I. (1). Some aspects of induced spawning in the catfish *Heteropneustes*. Naturwissenschaften **44** : 46.

Ramaswami, L. S. & Sundararaj, B. I. (2). Induced spawning in the catfish *Clarias*. Naturwissenschaften **44** : 384.

- Raney, E. C. *see* Robins, C. R.
- Ranzi, S. *see* Citterio, P.
- Ranzi, S. *see* Maldacea, L.
- Rasalan, S. B. & Villadolid, D. V. The hasnig, a bag net for pelagic fishing in the Philippines. Philipp. J. Fish. 3 1955 : 1-29 1 pl. 9 figs.
- Raut, H. *Acanthophtalmus cuneovirgatus* spec. nov. und *Acanthophtalmus robiginosus* spec. nov., mit einer Übersicht über die in Deutschland eingeführten *Acanthophtalmus*-Arten und einem Bericht über ihre Haltung im Aquarium. Aquar. Terrar. Z. 10 : 29-33 8 figs.
- Raynaud, P. *see* Serfaty, A.
- Rechnitzer, A. B. The use of paper partition chromatography in taxonomic studies. Int. Congr. Zool. 14 1953 (1956) : 333-335.
- Reed, R. J. (1). The prolonged spawning of the rosyface shiner, *Notropis rubellus* (Agassiz) in northwestern Pennsylvania. Copeia 1957 : 250.
- Reed, R. J. (2). Phases of the life history of the rosyface shiner, *Notropis rubellus*, in Northwestern Pennsylvania. Copeia 1957 : 286-290 1 fig.
- Reichenbach-Klinke, H. H. Augenschäden bei Meeresfischen durch den Pilz *Ichthyosporidium hoferi* (Plehn et Mulsow) und Bemerkungen zu seiner Verbreitung bei Mittelmeerfischen. Pubbl. Staz. zool. Napoli 29 : 22-32 1 fig. 2 pls. [English summary.]
- Reid, G. K. (1). External morphology of an embryo whale shark, *Rhincodon typus* Smith. Copeia 1957 : 157-158 1 fig.
- Reid, G. K. (2). Biologic and hydrographic adjustment in a disturbed Gulf Coast estuary. Limnol. Oceanogr. 2 : 198-212 4 figs.
- Reimers, N. *see* Nielson, R. S.
- Reinboth, R. Sur la sexualité du Téléostéen *Coris julis* (L.). C.R. Acad. Sci. Paris 245 : 1662-1665.
- Reynolds, R. A. *see* Hubbs, C.
- Ribeiro, P. de M. (1). On a new genus and a new species of South American fishes. Int. Congr. Zool. 14 1953 (1956) : 546-547 1 fig.
- Ribeiro, P. de M. (2). Notas para o estudo dos Pygidiidae Brasileiros (Pisces Pygidiidae) VI. Pap. Rep. Zool. Sec. Agric. S. Paulo 13 : 71-73.
- Richard, L. *see* Devillers, C.
- Riggs, C. D. *Mugil cephalus* in Oklahoma and Northern Texas. Copeia 1957 : 158-159.
- Robertson, G. M. (1). Paleocology of the Agnatha (cf. Bibliography). Nat. Res. Council Rep. Comm. on Treatise on Marine Ecology and Paleocology 1948-1949. Div. Geol. & Geogr. Dec. 1949 pp. 111-116.
- Robertson, G. M. (2). Agnatha in Treatise on marine ecology and paleoecology, vol. 2. Mem. geol. Soc. Amer. 67 : 995-998.
- Robertson, J. D. The habitat of the early vertebrates. Biol. Reviews 32 : 156-187.
- Robertson, O. H. Survival of precociously mature king salmon male parr (*Oncorhynchus tshawytscha* Juv.) after spawning. Calif. Fish Game 43 : 119-129 4 figs.
- Robins, C. R. (1). Effects of storms on the shallow-water fish fauna of southern Florida with new records of fishes from Florida. Bull. mar. Sci. Gulf & Caribbean 7 : 266-275 1 fig.
- Robins, C. R. (2). A study of the bluefin tuna populations from the eastern and western North Atlantic based on an analysis of fin-ray and gill-raker counts. Charles F. Johnson Oceanic Gamefish Invest., Univ. Miami, Fla. 57-13 (1957) (mimeographed). pp. 1-7.
- Robins, C. R. & Miller, R. R. Classification, variation, and distribution of the sculpins, genus *Cottus*, inhabiting Pacific Slope waters in California and Southern Oregon, with a key to the species. Calif. Fish Game 43 : 213-233.
- Robins, C. R. & Raney, E. C. (1). Distributional and nomenclatorial notes on the suckers of the genus *Moxostoma*. Copeia 1957 : 154-155.
- Robins, C. R. & Raney, E. C. (2). The systematic status of the suckers of the genus *Moxostoma* from Texas, New Mexico and Mexico. Tulane Stud. Zool. 5 : 291-318 12 figs.
- Robins, C. R. *see* Voss, G. L.
- Roche, G. (1). Ray's Bream, *Brama raia* Bloch, from the mouth of the river Moy. Irish Nats'. J. 12 1956 : 109.

Roche, G. (2). Sea horse, *Hippocampus hippocampus* (L.), from Co. Clare. Irish Nats' J. **12** 1956 : 110.

Rogers, K. T. Optokinetic testing of cyclopean and synophthalmic fish hatchlings. Biol. Bull. Woods Hole **112** : 241-248 8 figs.

Roi, P. E. see Ivasik, V. M.

Roland, J. see Dieuzeide, R.

Rosca, I. D. see Pora, E. A.

Rose, E. T. Notes on the age and growth of Spirit Lake yellow pikeperch (*Stizostedion v. vitreum*). Proc. Iowa Acad. Sci. **58** 1951 : 517-525.

Rosen, W. G. see Brown, D. G.

Ross, R. J. Ordovician Fossils from wells in the Williston Basin, Eastern Montana. Bull. U.S. geol. Surv. **1021-M** : 439-510 8 pls.

Roussow, G. Some considerations concerning sturgeon spawning periodicity. J. Fish. Res. Bd. Can. **14** : 553-572 11 figs. 1 pl.

Roy, H. Fischpankreas als Rohstoffquelle für die Insulingewinnung unter besonderer Berücksichtigung des Dorsch (Gadus morrhua). Z. Fisch. **6** : 469-487 10 figs.

Rübenberg, L. see Meyer-Waarden, P. F.

Runnström, S. Migration, age and growth of the brown trout (*Salmo trutta* L.) in Lake Rensjön. Rep. Inst. Freshwater Res. Drottningholm No. 38 : 194-246. 17 figs.

Rushton, W. (1). Fish diseases due to bacteria. Salm. Trout Mag. 1956 : 289-297 1 pl. 2 figs.

Rushton, W. (2). Fish diseases due to bacteria (2). Salm. Trout Mag. No. 150 : 165-171 2 figs.

Rutte, E. Einführung in die geologie von Unterfranken. Würzburg : 1-168 8 pls. figs.

Rychlicki, Z. & Zarnecki, St. Die Zatorer Karpfenaufzuchtmethod und deren Einfluss auf die Beseitigung der Bauchwassersucht. Z. Fisch. **5** : 423-442.

Sadoğlu, P. A Mendelian gene for albinism in natural cave fish. Experimentia **13** : 394.

(**Sadov, I. A.**) (1). [Development of perivitelline space in the oocytes of sturgeons.] C.R. Acad. Sci. URSS **112** : 174-176 3 figs. [In Russian.]

(**Sadov, I. A.**) (2). [Changes occurring in the size of nuclei during growth and maturation of the oocytes in sturgeon.] C.R. Acad. Sci. URSS **112** : 359-362 2 figs. [In Russian.]

Sahrhage, D. Heringswanderungen. Ergebnisse der Markierung von Heringen. Kosmos, Stuttgart **53** : 44-49 10 figs.

Saiki, M., et al. [Studies on the radioelements in the contaminating radioactive fish. II. On skipjacks caught in the Pacific Ocean in 1956.] Bull. Jap. Soc. Sci. Fish. **22** : 645-653 10 figs. [English summary.]

Saint-Seine, P. de. L'Evolution des Actinoptérygiens. Colloques Internal., Centre nat. Recherches Sci., Paris **60** : 1956 : 27-34.

Salzen, E. A. A trawling survey off the Gold Coast. J. Cons. Int. explor. Mer **23** : 72-82 2 figs.

Sandon, H. An abnormal specimen of *Synodontis membranaceus* (Teleostei, Siluroidea), with a discussion on the evolutionary history of the adipose fin in fish. Proc. zool. Soc. Lond. **127** 1956 : 453-459 Pl. 1.

San Juan, R. C. see Sulet, J. I.

Santa, V. & Pollinger, U. L'anatomie macro- et microscopique des glandes annexes du tube digestif chez la carpe. Anal. Inst. Cerc. pisc. Romane N.S. **1** 1956 : 335-344 figs.

Santos, R. S. Ocorrência de folhelo fossilífero Cretácico no Município de Presidente Olegário, Minas Gerais. Bol. Div. Geol. min. Rio de J. **155** 1955 : 1-27 3 pls.

Santos Pinto, J. dos (1). Parasitic castration in males of *Sardina pilchardus* (Walb.) due to testicular infestation by the Coccidia *Eimeria sardinae* (Thélohan). Rev. Fac. Cienc. Lisbon (2C) **5** : 209-224 3 pls. 1 fig.

Santos Pinto, J. dos (2). Deux cas de tumeurs sexuelles dans la sardine (*Sardina pilchardus* Walb.). Rec. Fac. Cienc. Lisbon (2C) **5** : 257-260 2 pls.

Sanzo, L. see Padoa, E.

Šapkarev, J. (1). La teneur en eau de la truite *Salmo letnica* Kar. au cours du développement. Rec. Trav. Sta. Hydrobiol. Ohrid **2** 1954 : 1-27. [French summary.]

Šapkarev, J. (2). Variations saisonnières de la teneur en graisse chez la truite d'Ohrd (*Salmo letnica*, Karaman). Rec. Trav. Sta. Hydrobiol. Ohrd **3** 1955 : 1-21 3 figs.

Sarkar, H. L. Composition of *Hilsa* catch in the Sundarbans of west Bengal during the winter months. Indian J. Fish. **4** : 340-343 1 fig.

Sarkar, H. L. & Kapoor, B. G. Deformities in some Indian cat fishes. J. Zool. Soc. India **8** 1956 : 157-164 5 figs.

Sarma, K. S. On the palaeontology of the Limestone Band of the Baripada Beds, Mayurbhanj, Orissa. Quart. J. Geol. Soc. India **29** : 103-105 1 pl.

Sato, M. On the pit organ system of *Pseudobagrus aurantiacus*, *Astroconger myriaster* and Gobies. Zool. Mag., Tokyo **66** : 332-336 4 figs.

Sauerteig, E. & Krebs, W. Eine neue methode zur Sektion kleiner Fische. Aqar. Terrar. Z. **10** : 128-130 5 figs.

(Savina, N. O.) [Biology of *Schizothorax argentatus* in the lake Balkhash.] Izv. Fish. Inst. Fishery resources in the lake Balkhash **37** 1956 : 129-157.

Sawyer, P. J. Laboratory care and feeding of larval lampreys. Copeia **1957** : 244.

Scattergood, L. W. & Coffin, G. W. Records of some Gulf of Maine fishes. Copeia **1957** : 155-156.

Schaefer, M. B. Some considerations of population dynamics and economics in relation to the management of the commercial marine fisheries. J. Fish. Res. Bd. Can., **14** : 669-681.

Scheier, A. see Cairns, J.

Schiemenz, F. Ersatz des instinktmässigen Wanderns der Fische in Fischtreppen durch das reflektorische Wandern als Grundlage zum Bau von Fischtreppen, sowie die Orientierung und das Verhalten der Fische in Fischtreppen. Z. Fisch. **6** : 61-84 19 figs.

Schindler, O. (1). Neues von den lebenden "Urweltfischen". Kosmos, Stuttgart **51** 1955 : 581-588 11 figs.

Schindler, O. (2). Freshwater fishes ... translated and edited by P. A. Orkin. London & New York, (Thames & Hudson) pp. 243 28 pls. (7 col.) 50 figs.

Schindowski, E. & Tesch, F. W. Methodisches zur Wachstumsrückberechnung. erläutert am Beispiel von *Lucioperca sandra* Cuv. u. Val., *Perca fluviatilis* L. und *Salmo trutta fario* L. Z. Fisch. **5** : 247-267.

Scholander, P. F., van Dam, L. & Enns, T. The source of oxygen secreted into the swimbladder of cod. J. Cell. comp. Physiol. **48** 1956 : 517-522 1 fig.

Scholander, S. Cold fish problem. Nat. Hist. N.Y. **66** : 456-466 figs.

Schreiter, T. Über eine eigenartige Schwimmblasenverlagerung bei Karpfen. Z. Fisch. **6** : 301-313 12 figs.

Schroeder, W. C. see Bigelow, H. B.

Schroll, F. Zur Ernährungsphysiologie der Ammonoeteslarven der Cyclostomen. Zool. Anz. **159** : 75-78 2 figs.

Schubert, P. see Bauer, K.

Schultz, L. P. (1). A new pinecone fish, *Monocentris reedi*, from Chile, a new family record for the Eastern Pacific. Proc. U.S. nat. Mus. **106** 1956 : 237-239 1 fig.

Schultz, L. P. (2). The frogfishes of the family Antennariidae. Proc. U.S. Nat. Mus. **107** : 47-105 14 pls. 8 figs.

Schultz, L. P. (3). The generic names *Barbus* and *Puntius*. Trop. Fish, Hobbyist **5** : 14-15; 29-31

Schwartz, F. J. First record of infestation and death in the ictalurid catfish, *Schilbeodes miurus*, by the parasite *Clinostomium marginatum*. Copeia **1956** No. 4 [1957] : 250-251.

Scott, J. S. Fish identification photographs. Angling in Malaya **4** 1956 : 60.

Scott, T. D. A new blenny (Tripterygiidae) and pipefish (Syngnathidae) from Kangaroo Island, South Australia. Trans. Roy. Soc. S. Austr. **80** : 180-183 2 figs.

Scott, W. B. Distributional records of fishes in Western Canada. Copeia **1957** : 160-161.

Sedlár, J. Beitrag zur Eiermenge beim *Ameiurus nebulosus* (Le Sueur, 1819) aus dem Flusssame des Flusses Žitava. Biológia, Bratislava **12** : 708-710.

Segaar, J. Brain and instinct with *Gasterosteus aculeatus*. Proc. Akad. Wet. Amst. **59C** 1956 : 738-749 11 figs.

(Semenov, K. I.) [On the influence of different light conditions upon the development of sturgeon-larvae within the period from hatching to active feeding under artificial breeding. C.R. Acad. Sci. URSS 113 : 937-940 2 figs. [In Russian.]

(Semenov-Tyan-Shanski, D. I.) [On the spawning of lamprey]. Zool. Zh., Moscow 35 1956 : 937-938. [In Russian.]

(Semko, R. S.) [New data on *Onchorynchus masu* in Western Kamchatka]. Zool. Zh., Moscow 1956 : 1017-1022. [Russian with English summary.]

Serfaty, A., & Raynaud, P. Quelques données sur l'électro-cardiogramme de la tanche (*Tinca tinca* L.) en eau douce. Bull. Soc. zool. France 82 : 49-56.

(Shamardine, I. P.) [The stages in development of pike]. Trud. Inst. Morf. Zhiv. 16 : 237-298 27 figs. [In Russian.]

(Shchetinina, L. A.) [On the reproduction of the Prussian carp in Veselovsk water-reservoir]. Zool. Zh., Moscow 35 1956 : 1517-1520. [Russian with English summary.]

Shelbourne, J. E. The feeding and condition of plaice larvae in good and bad plankton catches. J. Mar. Biol. Ass. U.K. 36 : 539-552 1 pl. 3 figs.

Shetter, D. S. *see* Whalls, M. J.

Shimada, B. M. *see* Alverson, F. G.

Shirai, K. *see* Saiki, M.

Shiraishi, Y., & Uchida, I. [On the morphological changes of the salmon fry with the absorption of yolk.] Jap. J. Ichthyol. 5 : 85-92 3 figs. 4 figs.

Shirkova, A. P. [On the biological heterogeneity of *Coregonus lavaretus maraenoides* Poljakow in connection with its introduction into other water reservoirs.] Zool. Zh., Moscow 36 : 951-953. [English summary.]

Shkorbatov, G. L. Experimental basis of fish acclimatization. Zool. Zh., Moscow 36 : 230-237. [English summary.]

(Shmalganzen, O. I.) [Ecological and morphological peculiarities in the development of the gill apparatus in Volga sturgeon larvae]. C.R. Acad. Sci. URSS 100 1955 : 837-839 2 figs. [In Russian.]

(Shturbina, M. A.) [The quality of the sturgeon fry in the rivers, related to the individual peculiarity of the eggs.] St. Petersburg. Acad. Imp. Sci. Ichthyol. Com. 4 1955 : 105-113 4 graphs. [In Russian.]

(Shulman, G. E.) [On cutaneous respiration in Gobioids]. Zool. Zh., Moscow 35 1956 : 314-316. [In Russian.]

(Shulman, G. E. & others). [Gas exchange in *Neogobius melanostomus* and *N. syrman* related to habitat in Azov Sea.] Ichth. Probl., Moscow 8 : 77-80. [In Russian.]

Sibakin, K. *see* Kleerekoper, H.

Siddiqui, A. A. *see* Bhuiya, M. A. H.

Siegfried, P. Der stratigraphische Wert der Fischfauna des westfälischen Ober-Campan. Paläont. Zeitschr. 30 1956 : 37-38.

Silas, E. G. The Ceylonese cyprinid genus *Eustira* Günther considered a synonym of *Danio* Hamilton. Copeia 1957 : 61-62 1 fig.

Simmons, E. G. An ecological survey of the Upper Laguna Madre of Texas. Publ. Inst. Mar. Sci. Univ. Texas. 4 No. 2 : 156-200.

Singer, B. Living silver. An impression of the British fishing industry. London (Secker & Warburg) pp. [vi] + 232 text illust.

Sivalingam, S. & Medcof, J. C. General features and productivity of the Wadge Bank trawl fishery. Bull. Fish. Res. Sta. Ceylon No. 6 : 1-23 6 figs.

Slastenenko, E. P. A list of natural fish hybrids of the world. Hidrobiologi, Istanbul 4 : 76-97.

Smigielska, T. Stratigraphical importance of the ichthiofauna from the Carpathian menilite Shales. Przegląd Geologiczny 1957 : 567-570 figs.

(Smirnova, E. N.) (1). [Embryonic and larval peculiarities in development of *Vimba vimba natio carinata* (Pall.)]. Trud. Inst. Morf. Zhiv. 20 : 71-94 6 figs. [In Russian.]

(Smirnova, E. N.) (2). [Morphological and ecological peculiarities in the development of *Rutilus frisii* (Nordm.)]. Trud. Inst. Morf. Zhiv. 20 : 95-120 7 figs. [In Russian.]

(Smirnova, L. I.) [The physiological role of leucocytes in digestion of fishes]. Ichth. Probl., Moscow 7 1956 : 107-118. [In Russian.]

Smith, C. L. Two new clinid blennies (*Malacotenus*) from Puerto Rico. Occ. Pap. Mus. Zool. Univ. Mich. No. 585 : 1-15 1 pl.

Smith, I. C. New restorations of the heads of *Pharyngolepis oblongus* Kiaer and *Pharyngolepis kiaeri* sp. nov., with a note on their lateral-line systems. Norsk geol. Tidsskr. 37 : 373-402 6 pls. figs.

Smith, I. W. The occurrence of damaged sea trout on the east coast of Scotland. Salm. Trout Mag. No. 150 : 148-149 2 figs.

Smith, J. L. B. (1). A remarkable new unicorn fish from East Africa. Ann. Mag. nat. Hist. (12) 9 1956 [1957] : 686-688 1 fig.

Smith, J. L. B. (2). The fishes of Aldabra-Part V. Ann. Mag. nat. Hist. (12) 9 1956 [1957] : 721-729 3 figs.

Smith, J. L. B. (3). The fishes of Aldabra. Part VI. Ann. Mag. nat. Hist. (12) 9 1956 [1957] : 817-829 5 figs.

Smith, J. L. B. (4). The fishes of Aldabra—Part VII. Ann. Mag. nat. Hist. (12) 9 : 888-892 1 fig.

Smith, J. L. B. (5). Deep-line fishing in Northern Mozambique, with the description of a new pentapodid fish. Ann. Mag. nat. Hist. (12) 10 : 121-124 1 pl.

Smith, J. L. B. (6). Dasyatid rays new to South Africa. Ann. Mag. nat. Hist. (12) 10 : 429-431 2 pls.

Smith, J. L. B. (7). The genus *Luzonichthys* Herre. Copeia 1956 [1957] : 251.

Smith, J. L. B. (8). Two rapid fatalities from stonefish stabs. Copeia, 1957 : 249.

Smith, J. L. B. (9). The fishes of the family Scorpaenidae in the Western Indian Ocean. Pt. 1. Ichthyol. Bull. Rhodes Univ. No. 4 : 49-69 4 pls. 5 figs.

Smith, J. L. B. (10). The fishes of the family Scorpaenidae in the western Indian Ocean. Pt. II. The subfamilies Pteroinae, Apistinae, Setarchinae and Sebastinae. Ichthyol. Bull., Rhodes Univ. No. 5 : 75-87 2 pls. 4 figs.

Smith, J. L. B. (11). Sharks of the genus *Isurus* Rafinesque, 1810. Ichthyol. Bull., Rhodes Univ. No. 6 : 91-96 1 pl. 1 fig.

Smith, J. L. B. (12). List of the family Labridae in the Western Indian Ocean with new records and five new species. Ichthyol. Bull., Rhodes Univ. No. 7 : 99-114 2 pls. 4 figs.

Smith, J. L. B. (13). The labrid fishes of the subgenus *Julis* Cuvier, 1814 (in *Coris* Lacepede, 1802) from South and East Africa. Ichthyol. Bull., Rhodes Univ. No. 8 : 117-120 2 pls. 1 fig.

Smith, J. L. B. (14). Four interesting new fishes from South Africa. S. Afr. J. Sci. 53 : 219-222 3 figs.

Smith, J. L. B. (15). A new shark from South Africa. S. Afr. J. Sci. 53 : 261-264 2 figs.

Smith, J. L. B. (16). A preliminary survey of the scylliogaliid dogfishes of South Africa. S. Afr. J. Sci. 53 : 353-359 2 figs.

Smith, S. *see* Brown, M. E.

Smith, S. H. Evolution and distribution of the coregonids. J. Fish. Res. Bd. Can. 14 : 599-604 1 fig.

Smith, W. C. Gonad condition, age and size of Manx herrings, 1945-53, and comparison with earlier years. Rep. Mar. Biol. Sta., Pt. Erin. 69 1956 : 21-28 2 figs.

Smyley, W. J. P. The life-history of the Bullhead or Miller's Thumb (*Cottus gobio* L.). Proc. zool. Soc. Lond. 128 : 431-453 5 figs.

Sochurek, E. *Proterohinus marmoratus* Pallas—eine Meergrundel vom Neusiedler See. Natur u Land 43 : 49.

(Soin, S. G.). [On the respiratory importance of carotinoid pigment in the eggs of salmonoid fishes and of other forms belonging to the order Clupeiformes]. Zool. Zh., Moscow 35 1956 : 1362-1369 2 pls. [Russian with English summary.]

Sparta, A. *see* Padoa, E.

Sperry, R. W. *see* Arora, H. L.

Spiecker, D. Die Galvanotaxis der Fische und ihre Auslösung auf Grund unmittelbarer Irritabilität der Rumpfmuskulatur. Zool. Jb. (Allg. Zool.) 67 : 229-260 21 figs.

- Spillman, J.** *see* Guibé, J.
- Springer, S. (1).** An outline for a Trinidad shark fishery. *Proc. Gulf & Carib. Fish. Inst.* 1949 : [1-10].
- Springer, S. (2).** Some observations on the behaviour of schools of fishes in the Gulf of Mexico and adjacent waters. *Ecology* **38** : 166-171.
- Springer, S. (3).** Tuna resources of the tropical and sub-tropical Western Atlantic. *Trans. Amer. Fish. Soc.* **85** (1955) : 13-17.
- Springer, S. & Bullis, H. R.** Collections by the 'Oregon' in the Gulf of Mexico. *Sp. Sci. Rep. Fish. No.* 196 1956 : 1-134.
- Springer, S. & Thompson, J. R.** Night sharks, *Hypoprion*, from the Gulf of Mexico and the Straits of Florida. *Copeia* **1957** : 160.
- Springer, V. G.** A new genus and species of Elopidae fish (*Laminospondylus transversus*) from the Upper Cretaceous of Texas. *Copeia* **1957** : 135-140 1 pl. 1 fig.
- Springer, V. G.** *see* Hubbs, C.
- Stanley-Jones, D.** Axial rotation and the origin of vertebrates. *Amer. Nat.*, **90** 1956 : 361-368.
- Starmach, K.** Characteristic of rivers from biological and fishery point of view. *Polsk. Arch. Hydrobiol.* **3** 1956 : 307-332 4 figs. [English summary.]
- Starr, T. J. & Fosberg, W.** Filter paper electrophoresis of serum proteins from sharks. *Copeia* **1957** 292-295 2 figs.
- Stefan, M.** La consommation d'oxygène individuelle et en groupe chez quelques poissons marins et d'eau douce. *Bul. Inst. Cercet. Pisc. Roman.* **16** (1) : 73-81.
- Steffens, W.** *see* Menzel, H. V.
- Steinitz, H. & Ben-Tuvia, A.** The hybrid of *Barbus longiceps* C.V. and *Varicorhinus damascinus* C.V. (Cyprinidae, Teleostei). *Bull. Res. Coun. Israel* **6B** : 176-188 19 figs.
- Steinmetz, C.** *see* Lagler, K. F.
- Steopol, I.** *see* Busnita, T.
- Stephen, A. C., Rae, B. B. & Wilson, E.** Rare marine invertebrates recently found in the Scottish area. *Scott. Nat.* **69** No. 3 : 1-4.
- Stephenson, W. & Grant, W. M.** Experiments upon impounded callop or yellowbelly (*Plectroplites ambiguus* (Richardson)) at Somerset Dam. *Ichthyol. Notes Qd.* **1** : 73-116 1 pl. 10 figs.
- Sterba, G.** Über die Struktur der Eihüllen bei einige Knochenfischen. *Naturwissenschaften* **44** : 187 2 figs.
- Stewart, R. N.** The migratory char of Iceland. *Salm. Trout Mag.* No. 151 : 239-244.
- Stinton, F. C. (1).** Fish otoliths from the London Clay of Bognor Regis, Sussex. *Proc. Geol. Ass. Lond.* **67** 1 & 2 : 15-31 pl. 2 text-fig. 1.
- Stinton, F. C. (2).** Teleostean otoliths from the Tertiary of New Zealand. *Trans. roy. Soc. N.Z.* **84** : 513-517 1 pl.
- Stokely, P. S.** *see* Dineen, C. F.
- Stolk, A. (1).** Changes in the pituitary gland of the cichlid *Cichlasoma biocellatum* (Regan) with thyroidal tumour. *Proc. Akad. Wet. Amst.* **59C** 1956 : 494-505 11 figs.
- Stolk, A. (2).** Polycystic kidneys in the characid *Moenkhausia pittieri* Eigenmann. I-II. *Proc. Akad. Wet. Amst.* **59C** 1956 : 506-519 12 figs.
- Stolk, A. (3).** Thyroid and pituitary gland in a goldfish (*Carassius auratus*) with acromegaly. *Proc. Akad. Wet. Amst.* **59C** 1956 : 611-623 8 figs.
- Stolk, A. (4).** Tumours of fishes. XI. Carcinoma of the skin in the anabantid *Colisa labiosa* (Day). *Proc. Akad. Wet. Amst.* **59C** 1956 : 624-633 9 figs.
- Stolk, A. (5).** Tumours of fishes. XII-XIII. *Proc. Akad. Wet. Amst.* **60C** : 31-52 21 figs.
- Stolk, A. (6).** Oval cells with club-shaped inclusions in the connective tissue of the cichlid *Pterophyllum scalare* Cuvier. *Proc. Akad. Wet. Amst.* **60C** : 53-60 8 figs.
- Stolk, A. (7).** Tumours of fishes. XIV-XV. *Proc. Akad. Wet. Amst.* **60C** : 185-211 23 figs.
- Stolk, A. (8).** Multiple cysts in the central nervous system and the optic nerves of the cichlid *Cichlasoma facetum* (Jenyns). *Proc. Akad. Wet. Amst.* **60C** : 338-348 01 figs.

Stolk, A. (9). Cerebral cysts, abnormal pituitary gland and changes of the thyroid gland in the viviparous cyprinodont *Lebistes reticulatus* (Peters). I-II. Proc. Akad. Wet. Amst. **60C** : 349-363 14 figs.

Stolk, A. (10). Tumours of fishes. XVI. Fibroma of the intestine in the viviparous cyprinodont *Lebistes reticulatus* (Peters). Proc. Akad. Wet. Amst. **60C** : 364-375 13 figs.

Stolk, A. (11). Pharyngeal glands in the cichlid *Haplochromis multicolor* (Hilgendorf). Proc. Akad. Wet. Amst. **60C** : 567-577 15 figs.

Stolk, A. (12). Tumours in fishes. XVII-XIX. Proc. Akad. Wet. Amst. **60C** : 640-665 25 figs.

Storey, M. H. *see* Myers, G. S.

Strasburg, D. W. Notes on the respiration of small *Remora remora*. Copeia 1957 : 58-60.

Strawn, K. *see* Hubbs, C.

Stutinsky, F. La neurosécrétion chez les vertébrés. Année biol. (3) **29** 1953 : 487-516.

Sulit, J. I., Navarro, O. B., San Juan, R. C. & Caldito, E. B. Proximate chemical composition of various species of Philippine market fishes. Philipp. J. Fish. **2** 1954 : 109-123 1 fig.

Sullivan, B. J. *see* Musacchia, X. J.

Sundararaj, B. I. *see* Ramaswami, L. S.

Suomalainen, P. & Pihlgren, A. On the thiaminase activity of fish and some other animals and on the preservation of thiaminase in silage made from fish. Acta Agral. fenn. **83** 1955 : 221-229.

Suttkus, R. D. (1). Age and growth of a small stream population of "stunted" smallmouth black bass, *Micropterus dolomieu dolomieu* (Lacépède). N.Y. Fish Game J. **2** 1955 : 83-94 1 fig.

Suttkus, R. D. (2). First record of the mountain mullet, *Agonostomus monticola* (Bancroft) in Louisiana. Proc. La Acad. Sci. **19** 1956 : 43-46.

Suttkus, R. D. (3). Early life history of the Gulf menhaden, *Brevoortia patronus*, in Louisiana. Trans. 21st N. Amer. Wildl. Conf. 1956 : 390-407 6 pls. 8 figs.

Suzuki, H. *see* Hayashi, S.

Suzuki, K. *see* Okada, Y.

Suzuki, R. (1). [Development of carp eggs with some foreign sperms (preliminary report).] Jap. J. Ichthyol. **5** : 114-117 1 fig. [English summary.]

Suzuki, R. (2). Development of goldfish eggs inseminated with some foreign sperms. (A preliminary report). Zool. Mag., Tokyo **66** : 34-37.

Svärdson, G. (1). The Coregonid problem. VI. The Palearctic species and their intergrades. Rep. Inst. Freshwater Res. Drottningholm No. **38** : 267-356.

Svärdson, G. (2). The salmon and the climate. Rep. Inst. Freshwater Res. Drottningholm No. **38** : 357-384. [English summary.]

Svetovidov, A. N. (1). On the correlation between the number of pyloric caeca and the type of food in fishes. Notes on general problems of ichthyology **19** 1952 : 282-289. [In Russian.]

Svetovidov, A. N. (2). Some features of resemblance and difference in the distribution, ecology and other characters between *Gadus morrhua* and *Clupea harengus*. Notes on general problems of ichthyology **20** 1953 : 122-133 2 figs. [In Russian.]

Svetovidov, A. N. (3). The Atlantic origin of some groups of fishes. Int. Congr. Zool. **14** 1953 (1956) : 118-124.

Svetovidov, A. N. (4). Morphological principles of the classification of the Gadidae. Int. Congr. Zool. **14** 1953 (1956) : 535-540.

Svetovidov, A. N. *see* Kirpichnikov, V. S.

Svichenskaya, A. A. [New species of mullet from the Lower Miocene of the Caucasus.] Mater. Osnovam. Paleont., **1** : 61-62.

Swan, M. A. (1). Brown trout of Loch Kernsary. Salm. Trout Mag. No. **150** : 121-127 1 pl.

Swan, M. A. (2). Specimens of Char from Shetland and the Faroes. Scot. Nat. **69** : 67-70.

Swineford, A. *see* Miller, H. W.

Syazuki, K. & Hayama, K. Studies on nutrition of carp-fry. 3. Consumption of oxygen. J. Shimonoseki Coll. Fish. **6** : 255-260. [English summary.]

Szabo, S. *see* Gyurko, S.

Szabo, T. (1). Un noyan particulier dans la formation réticulée bulbaire de certains poissons électriques (Mormyridés). Arch. Anat. micr. Morph. exp. **46** : 81-91 6 figs.

Szabo, T. (2). Un noyau particulier dans la formation réticulée bulbaire de quatre poissons électriques appartenant à la famille des Gymnotidae. C.R. Acad. Sci. Paris **245** : 1957-1959 1 pl.

Taguchi, K. [Seasonal variation of the good fishing area of salmon and the movements of water masses in the waters of Western North Pacific. III. Relation between the distribution of salmon population and oceanographical conditions mainly in the southern waters of 48° N lat.] Bull. Jap. Soc. Sci. Fish. **22** : 609-617 8 figs. [English summary.]

Taguchi, S. see Ishida, J.

Tait, J. S. Nitrogen and argon in salmonoid swimbladders. Canad. J. Zool. **34** 1956 : 58-62 1 fig.

Takahasi, N. On the so-called accessory respiratory organ "gill-helix" found in some clupeiform fishes, with special reference to its function and its genealogy. Jap. J. Ichthyol. **5** : 71-77 1 pl.

Talbot, F. H. The fishes of the genus *Lutianus* of the East African coast. Ann. Mag. nat. Hist. (12) **10** : 241-258 9 pls.

(Tambs-Lyuke, H.) [Development of the sea-fishery investigations in Norway.] Ichth. Probl. Moscow **8** : 19-24. [In Russian.]

Tamura, T. (1). A study of visual perception in fish, especially on resolving power and accommodation. Bull. Jap. Soc. sci. Fish. **22** : 536-557 12 figs.

Tamura, T. (2). On the relation between the intensity of illumination and the shifting of cones in the fish retina. Bull. Jap. Soc. sci. Fish. **22** : 742-746 6 figs. [English summary.]

Tanonaka, G. K. The occurrence of the square-tail, *Tetragonurus cuvieri*, on the high seas south of the Aleutian islands. Copeia **1957** : 53-54.

Tarlo, L. B. A preliminary note on new ostracoderms from the lower Devonian (Emsian) of Central Poland. Acta palaeont. Polon. **2** : 225-234 1 pl.

Teichmann, H. Das Reichvermögen des Aales (*Anguilla anguilla* L.). Naturwissenschaften **44** : 242.

Teodorescu-Leonte, R. & others. Quelques données sur la reproduction de *Caspialosa pontica* Eichw. dans le Danube. Bul. Inst. Cercet. Pisc. Roman. **16** (1) : 37-46. [French summary.]

Terpenning, J. G. see Larkin, P. A.

Tesch, F. W. Percidenwachstum in eutrophen norddeutschen Flachseen. Z. Fisch. **5** : 593-606 11 figs.

Tesch, F. W. see Schindowski, E.

Thenius, E. see Papp, A.

Thienemann, A. Die Fische der Deutschen Limnologischen Sunda-Expedition. Arch. Hydrobiol. Suppl. **23** : 471-477.

Thines, G. & Kähling, J. Untersuchungen über die Farbempfindlichkeit des Höhlenfisches *Anoptichthys jordani* Hubbs und Innes (Characidae). Zeitschr. Biol. **109** : 150-160 3 figs.

Thomopoulos, A. (1). Sur quelques oeufs planctoniques de téléostéens de la Baie de Villefranche. II. Pêches du mois de Septembre. Bull. Inst. océanogr. Monaco No. 1072 1956 : 1-16 2 figs.

Thomopoulos, A. (2). Sur la ligne latérale de téléostéens. I. *Coecula* (*Sphagebranchus*) *imberbis* De la Roche et *Ophidion barbatum* Klein à l'éclosion. Bull. Soc. zool. France **82** : 102-107 3 figs.

Thomopoulos, A. (3). Influence de la lumière sur le mouvement de l'oeuf de Truite (*Salmo irideus* Gib.). C.R. Soc. Biol., Paris **150** : 2091-2093.

Thomopoulos, A. & Bauchot, R. Sur *Cottus bubalis* Euphrasen. I. Reproduction en aquarium et développement embryonnaire. Bull. Soc. zool. France **82** : 120-126. 2 figs.

Thompson, J. R. see Springer, S.

Tibbo, S. N. see Leim, A. H.

Tiews, K. Biologische Untersuchungen am Roten Thun (*Thunnus thynnus* [Linnaeus]) in der Nordsee. Ber. Dtsch. Wiss. Komm. Meeresforsch. **14** : 192-220.

Tiews, K. see Lillelund, K.

(Tikhonov, V. I.) [A new commercial fish in the Black Sea]. *Priroda* 5: 102-104 2 figs.

(Tkacheva, K. S.) [Reproduction of *Trahurus trachurus* L. in Black Sea]. *Ichth. Probl., Moscow* 8: 51-54 3 figs. [In Russian.]

Točko, M. Développement de *Chondrostoma nasus ohridanus* Kar. *Rec. Trav. Sta. Hydrobiol. Ohrid* 3 1955: 41-54 17 figs.

Todicescu, S. *see* Picoș, C. A.

(Tokarev, A. K.) [Peculiarities on searching for food and character of feeding of shoals of pelagic fishes.] *Trud. Sovesh. Ikhtiol. Komm.* 5 1953 [1955]: 158-166 5 figs. [In Russian.]

Tomiya, I. & Abe, T. Figures and descriptions of the fishes of Japan. *Tokyo* 56: 1141-1169 3 pls.

Toner, E. D. Movements of salmon around Ireland—VII: From Rath. *Co. Kerry* (1950-1953). *Proc. roy. Irish Acad.* 58B: 321-328 2 figs.

Tortonese, E. Spedizione subacquea Italiana nel Mar Rosso. Ricerche zoologiche. VIII. Pesci Isospondili; Apodi, Sinentognati; Eterosomi e Discocefali. *Riv. Biol. colon.* 15: 49-55.

Tortonese, E. *see* Padoa, E.

Tosko, M. Développement de *Chondrostoma nasus ohridanus* Kar. *Fac. phil. Univ. Skopje* 3 1955: 41-54 17 figs.

Travassos, H. & Pinto, S. Y. Ictiofauna de Pirassununga. III. Familia Cichlidae (Perciformes-Actinopterygii). *Bol. Mus. nac. Rio. de J. Zool.* No. 169: 1-16 19 figs.

Trites, R. W. *see* Leim, A. H.

Trochanis, S. The incredible four-eyed *Anableps doyii*. *Aquarium, Philad.* 26: 149-152 3 figs.

(Troitzkii, S. K.) [Reproduction and growth of the yearlings of *Aspius* in Kuban river.] *Ichth. Probl., Moscow* 7 1956: 134-138. [In Russian.]

Troshin, A. S. *see* Kirpichnikov, V. S.

Trout, G. C. The Bear Island cod: migrations and movements. *Fish. Invest. London* (2) 21 No. 6: 1-51 40 figs.

Tschörtner, U. Untersuchungen über den Einfluss einiger Milieufaktoren auf die Entwicklung des Hechtes (*Esox lucius* L.). *Arch. Hydrobiol. Suppl.* 24 1956: 123-152 3 pls. 56 figs.

Tucker, D. W. Studies on the Trichiuroid fishes.—IV. A specimen of *Evoxymetopon taeniatus* (Poey) Gill, from the Gulf of Mexico. *Ann. Mag. nat. Hist.* (12) 10: 425-428 1 fig.

(Tugarina, P. Y.) [Some data on reproduction of *Thymallus arcticus baicalensis*]. *Zool. Zh. Moscow* 35 1956: 938-939. [In Russian.]

Turchini, J. Recherches histochimiques sur les corps suprarénoux des sélaciens. *Ann. Histochém.* 1 1956: 78-80.

Turner, C. L. The breeding cycle of the South American fish, *Jenynsia lineata*, in the Northern Hemisphere. *Copeia* 1957: 195-203.

Tuurala, O. Über den Einfluss der osmotischen Belastung auf die Neurosekretion der Kleinfische *Gasterosteus aculeatus* L. und *Phoxinus laevis* L. aus dem Brackwasser des Finnischen Meerbusens. *Ann. Acad. sci. Fenn. Helsinki* (A) IV Biol. No. 36: 1-9 pl. i.

Twomey, E. Trout of Caragh Lake, Co. Kerry, Ireland. *Salm. Trout Mag.* 1956: 112-119 3 figs.

Twomey, E. *see* Went, A. E. J.

Uchida, I. *see* Shiraishi, Y.

Underhill, J. C. The distribution of Minnesota minnows and darters in relation to Pleistocene glaciation. *Occ. Pap. Minn. Mus. nat. Hist.* No. 7: 1-45 maps.

Upton, G. V. *see* Bondy, P. K.

Vaas, K. F. On the nutritional relationship between plankton and fish in Indonesian freshwater ponds. Symposium on marine and freshwater plankton in the Indo-Pacific (Madras 1954) 1-8 (sep. page.)

Valérien, J. L'anhydrase carbonique et la production des gaz de la vessie natatoire de *Serranus cabrilla* (L.) et *S. scriba* (L.). *Vie et Milieu* 8: 23-57 2 pls. 11 figs.

Vallmitjana, L. & Gadea, E. Estudios histológicos del atún (*Thynnus thynnus* L.). *Publ. Inst. Biol. apl. Barcelona* 23 1956: 5-19 14 figs. [English summary.]

Wallowe, H. H. Sexual differentiation in the teleost fish *Xiphophorus hellerii*, as modified by experimental treatment. Biol. Bull. Woods Hole, **112** : 422-429.

Van Bemmél, A. C. V. *see* Bemmél, A. C. V. van.

Van Campen, W. & Hoven, E. E. Tunas and tuna fisheries of the world: an annotated bibliography, 1930-53. Fish. Bull. U.S., **57** 1956 : 173-249.

Van Dam, L. *see* Scholander, P. F.

Van de Kamer, J. C. *see* Kamer, J. C. van de.

Van der Heide, S. *see* Heide, S. van der.

Van Oosten, J. *see* Brown, M. E.

Vargas, F. & Concha, J. (1). Histología y técnica de extirpación de las glándulas adrenales en el Teleosteo *Sicyases sanguineus*. Invest. Zool. Chil. **3** : 81-87 5 figs.

Vargas, F. & Concha, J. (2). Fisiología de las glándulas adrenales en el Teleosteo, *Sicyases sanguineus*. Invest. Zool. Chil. **3** : 88-95.

Vargas, F. F. *see* Concha, B. J.

Vasiliu, G. D. & Costea, E. Contribution à la connaissance de la biologie de la nutrition chez *Vimba vimba* natio *carinata* L. dans les eaux de la Roumanie. Notul. biol., București **5** 1947 : 229-236.

Vasiliu, G. D. & Nicolau, A. (1). Nouvelles données sur la nutrition naturelle de la Sandre (*Sander lucioperca* L.) dans les eaux de la Roumanie. Notul. biol. București. **5** 1947 : 181-198 2 pls.

Vasiliu, G. D. & Nicolau, A. (2). Recherches sur la biologie de la nutrition naturelle chez *Aspius aspius* L. dans les eaux de la Roumanie. Notul. biol. București **5** 1947 : 250-261.

Vasiliu-Suceveanu, N. *see* Radulescu, I.

(Vasnetzov, V. V. & others). [The stages of development of semi-migratory fishes of the Volga and Don, *Abramis brama*, *Cyprinus carpio*, *Rutilus rutilus caspicus*, *Rutilus r. heckeli* and *Lucioperca lucioperca*]. Trud. Inst. morf. Zhiv. **16** : 7-76 5 figs. [In Russian.]

Vengrzhin, E. P. *see* Shulman, G. E.

Verigin, B. V. [Structure of the gill apparatus and the superbranchial organ of *Hypophthalmichthys molitrix* Val.] Zool. Zh., Moscow **36** : 595-602 4 pl. 9 figs. [English summary.]

Vernon, E. H. Morphometric comparison of three races of kokanee (*Oncorhynchus nerka*) within a large British Columbia lake. J. Fish. Res. Bd. Can. **14** : 573-598 1 fig.

Vernon, E. H. & McMynn, R. G. Scale characteristics of yearling coastal cutthroat and steelhead trout. J. Fish. Res. Bd. Can., **14** : 203-212 6 figs.

Vervoort, W. Note on the pituitary cytology of *Lebistes reticulatus* (Peters) I-II. Proc. Akad. Wet. Amst. **60C** : 486-509 2 pls. 4 figs.

Vialli, M. La quantita' di acido desossiribonucleica per nucleo negli entroati' di *Latimeria*. R.C. Ist. Lombardo Cl. Sci. Mat. Nat. **91** : 680-686.

Vialli, M. *see* Padoa, E.

Vickers, K. U. *see* Went, A. E. J.

Vignais, P. *see* Grangaud, R.

Villadolid, D. V. *see* Blanco, G. J.

Villadolid, D. V. *see* Rasalan, S. B.

Villaluz, D. K. *see* Rabanal, H. R.

Villmitjana, L. Contribución al estudio de los espermatozoides de teleostes. Bol. Soc. esp. Hist. nat. Sec. Biol. **55** : 185-192 2 pls.

Vilter, V. Organisation remarquable de la rétine du poisson abyssal *Bathylagus benedicti*. Int. Congr. Zool. **14** 1953 (1956) : 290.

(Vladimirskaya, M. I.) (1). [The white fish of lake Imandra.] Ichth. Probl. Moscow **6** 1956 : 136-148. [In Russian.]

Vladimirskaya, M. I. (2). Lake and river trout in the basin of lake Imandra. Bull. Soc. Nat. Moscou, Biol. **62** No. 4 : 37-50. [English summary.]

Vladimirskaya, M. I. (3). [Grayling from the lakes of the North-Western area of the Lake Imandra basin.] Zool. Zh., Moscow **36** : 729-736 1 pl. [English summary.]

Vladykov, V. D. (1). Distant recaptures of shad (*Alosa sapidissima*) tagged in Quebec. Nat. canad. **83** 1956 : 235-249 4 figs.

Vladykov, V. D. (2). Les formes locales de la truite rouge du Québec (*Salvelinus marstoni*) (1). Nat. canad. **84** : 233-248.

Vokes, H. E. Miocene fossils of Maryland. Bull. Maryland Dep. Geol. **20** : VII, 1-85, 31 pls.

(Volodin, V. M.) (Embryonic development of the autumn *Clupea harengus membras* and the oxygen demand during this development.] Ichth. Probl., Moscou **7** 1956 : 123-133 3 figs. [In Russian.]

Volpe, A. V. Fingerprinting fish. Bull. int. oceanogr. Fdn. **2** 1956 : 135-142.

Vondett, J. E. see Whalls, M. J.

Vorderwinkler, W. see Axelrod, H. R.

Voss, G. L. & Robins, C. R. Progress report No. 3. Summary of investigations for the period comprising September 1956 through April, 1957. Charles F. Johnson Oceanic Gamefish Invest. Univ. Miami **57-15** (1957) pp. 1-11 (mimeographed).

Voss, N. A. Fishes of the family Gempylidae collected by the Bermuda Oceanographic Expeditions 1929, 1930, 1931 and 1934. Copeia **1957** : 304-305.

Wallin, O. On the growth structure and developmental physiology of the scale of fishes. Rep. Inst. Freshwater Res. Drottningholm No. **38** : 385-447 5 figs. 32 pls.

Walters, V. (1). *Protolophotus*, a new genus of allotriognath fish from the Oligocene of Iran. Copeia **1957** : 60-61.

Walters, V. (2). *Alphestes scholanderi*, a new sea bass from the West Indies. Copeia **1957** : 283-286 4 figs.

Warburton, B. & others. Reproductive behavior of *Gambusia heterochir*. Copeia **1957** : 299-300.

Ward, J. W. The reproduction and early development of the sea catfish, *Galeichthys felis*, in the Biloxi (Mississippi) Bay. Copeia **1957** : 295-298.

Warren, F. J. see Denton, E. J.

Weeks, L. G. Origin of carbonate concretions in Shales, Magdalena Valley, Colombia. Bull. geol. Soc. Amer. **68** : 95-102 4 pls.

Weiler, W. (1). Fischreste aus dem Tertiär von Epteroe südlich von Grossalmerode. Notizbl. hess. Landesamt. Bodenforsch. **85** : 24-27 9 figs.

Weiler, W. (2). Zur fischfauna des Dobergs bei Bünde in Westfalen. Paläont. Z. **31** : 135-138.

Weiler, W. (3). in Martin, G. P. R. & Weiler, W. Das Aldorfer Otolithen—"Pflaster" und seine Fauna. (Mittlerer Mündel Mergel, Malm.). Senckenbergiana leth. **38** : 211-249 3 pls. 2 figs.

Welander, A. D., Alverson, D. L. & Bergman, P. Rare fishes from the Eastern North Pacific Ocean. Fish. Res. Pap. Wash. **2** : 1-7 2 figs.

Welander, A. D. & others. Occurrence of the boar fish, *Pseudopentaceros richardsoni*, and the zeid, *Allocyttus verrucosus* in the North Pacific. Copeia **1957** : 244-245.

Went, A. E. J. (1). Salmon movements around Ireland. VI. From Portballintrae, Co. Antrim. (1953 and 1954). Proc. R. Irish Acad. **58B** **2** 1956 : 17-21 1 fig.

Went, A. E. J. (2). Sea trout of the Cashla river with notes on the salmon. Salm. Trout Mag. 1956 : 63-76 3 figs.

Went, A. E. J. (3). The pike in Ireland. Irish Nat. J. **12** : 177-178 2 figs.

Went, A. E. J. (4). A further specimen of dusky perch, *Epinephelus gigas* Brunnich from Irish waters. Irish Nat. J. **12** : 202.

Went, A. E. J. (5). Biology of the salmon. Nature London **180** : 789-790.

Went, A. E. J. (6). Sea trout of the River Ilan. Salm. Trout Mag. No. 150 : 139-147.

Went, A. E. J. & Twomey, E. Notes on the Irish Char, *Salvelinus colii* Gunther. VI. Irish Nat. J. **12** : 205-206.

Went, A. E. J. & Vickers, K. U. Salmon and trout research on the river Foyle. 3rd Ann. Rep. Foyle Fish. Comm. App. III. 1955 : 1-8 1 fig.

Whalls, M. J., Shetter, D. S. & Vondett, J. E. A simplified rotary fish screen and an automatic water gate. Trans. Amer. Fish. Soc. **86** (1956) : 371-380 4 figs.

Wheeler, A. C. *Syngnathus rostellatus* as a British fish. *Essex Nat.* **30** : 56.

Wheeler, J. F. G. The problem of poisonous fishes. *Rev. Agric. Ile Maurice* **33** 1954 : 132-139.

Whiting, H. P. Mauthner neurones in young larval lampreys (*Lampetra* spp.). *Quart. J. micr. Sci.* **98** : 163-178 7 figs.

Whitley, G. P. (1). The freshwater fishes of Australia. *Australasian Aquafish*, Sydney **1** 1956 No. 9 : 9-12 no. 10 : 9-12.

Whitley, G. P. (2). Ichthyological illustrations. *Proc. R. Zool. Soc. N.S.W.* 1955-56 : 56-71 12 figs.

Wickler, W. (1). Ei und Larve von *Symphysodon discus* Heckel. *Aquar. Terrar. Z.* **10** : 7-12 20 figs.

Wickler, W. (2). Die Larve von *Blennius fluvialis* Asso 1784. *Biol. Zbl.* **76** : 453-466 13 figs.

Wickler, W. (3). Das Kampfverhalten von *Nannostomus beckfordi aripirangensis* (Pisces-Cypriniformes-Erythrinidae). *Bull. aquat. Biol.* **1** : 13-15.

Wickler, W. (4). Das Ei und die Embryonalentwicklung bei Fischen. *Mikrokosmos* **46** : 217-220 6 figs.

Wiepkema, P. R. Het spel van de Bittervoorns. *Levende Nat.* **60** : 169-177 8 figs.

Wilber, C. G. *see* Musacchia, X. J.

Wilimovsky, N. J. *see* Mohr, J. L.

Willgohs, J. F. Some notes on *Beryx decadactylus* (Cuv. & Val.) in European waters with a special account of Norwegian records. *Arb. Univ. Bergen* 1956 No. 15 : 1-13 2 figs.

Williams, F. Preliminary survey of the pelagic fishes of East Africa. *Fish. Publ. Lond.* No. 8 1956 : 1-68 15 pls.

Williams, F. & Newell, B. S. Notes on the biology of the dorade or dolphin fish (*Coryphaena hippurus*) in East African waters. *E. Afr. Agric. J.* **23** : 113-118 3 figs.

Wilson, E. *see* Rae, B. B.

Wilson, E. *see* Stephen, A. C.

Winn, H. E. Egg site selection by three species of darters (Pisces : Percidae). *Brit. J. Anim. Behav.* **5** : 25-28.

Wohlschlag, D. E. Information from studies of marked fishes in the Alaskan Arctic. *Copeia* 1956 No. 4 [1957] : 237-242 1 fig.

Wolfsheimer, G. A spawning of porcupine puffers. *Aquarium, Philad.* **26** : 288-290 1 fig.

Wood, E. M. & Yasutake, W. T. Histopathology of kidney disease in fish. *Amer. J. Path.* **32** 1956 : 845-857 18 figs.

Wood, F. G. Southern extension of the known range of the basking shark, *Cetorhinus maximus* (Gunnerus). *Copeia* 1957 : 153-154.

Woodhead, P. M. J. Reactions of Salmonid larvae to light. *J. exp. Biol.* **34** : 402-416 7 figs.

Woods, L. P. *Beryx splendens* Lowe in the Gulf of Mexico. *Copeia* 1957 : 298-299.

Woods, L. P. & Inger, R. F. The cave, spring and swamp fishes of the family Amblyopsidae of Central and Eastern United States. *Amer. Midl. Nat.* **58** : 232-256 11 figs.

Woolcott, W. S. Comparative osteology of serranid fishes of the genus *Roccus* (Mitchill). *Copeia* 1957 : 1-10 2 pls.

Worbe, J. F. *see* Cordier, D.

Wunder, W. Über den Bau der Netzhaut beim Rotbarsch (*Sebastes marinus* L.). *Verh. dtsch. zool. Ges.* 1956 : 95-96.

Yakovlev, V. N. [First occurrence of the genus *Scardinius* of the family Clupeidae in the Upper Tertiary deposits of Siberia.] *Mater. Osnovam Paleont.* **1** : 63-65. [In Russian.]

Yamaguchi, M. *see* Kuronuma, K.

Yamamoto, K. Studies on the formation of fish eggs. X. Demonstration of carbohydrates related to Da-Fano-positive bodies in the oocyte of the flounder, *Liopsetta obscura*. *Annot. zool. jap.* **30** : 33-37 10 figs.

Yamamoto, T. S. [Histochemical study on the early development of the herring]. *Zool. Mag. Tokyo* **66** : 289-294 5 figs. [English summary.]

Yamamoto, T. S. *see* Kanoh, Y.

Yanagimachi, R. (1). Studies of fertilization in *Clupea pallasii*. I. Extension of fertilizable life of the unfertilized eggs by means of Isotonic Ringer's solution. Zool. Mag., Tokyo **66** : 218-221. [English summary.]

Yanagimachi, R. (2). Studies of fertilization in *Clupea pallasii*. II. Structure and activity of spermatozoa. Zool. Mag., Tokyo **66** : 222-225 2 figs.

Yanagimachi, R. (3). Studies of fertilization in *Clupea pallasii*. III. Manner of sperm entrance into the egg. Zool. Mag., Tokyo **66** : 226-233. 9 figs. [English summary.]

Yanagishima, S., & Mori, S. [Studies on the variation and adaptation of fishes. I. Adaptation of killifish (*Oryzias latipes* T. & S. 1. Field survey. 3. Experimental study]. Zool. Mag., Tokyo **66** : 351-366 9 figs. [English summary.]

Yarmoshenko, N. P. *see* Movchan, V. A.

Yasutake, W. T. *see* Wood, E. M.

Yeh, S. *see* Liu, H.

Yoshida, H. & Ito, T. Fish fauna of the Japan Sea. J. Shimonoseki Coll. Fish. **6** : 261-270.

Yoshida, H. O. *see* Otsu, T.

Yoshihara, T. & Fujioka, J. [The toxicity of chemicals on fish. II. Estimation of the effectiveness of insecticides on the young carp, *Cyprinus carpio* Linné.] Bull. Jap. Soc. Sci. Fish. **22** : 641-644 3 figs. [English summary.]

Yoshizaki, M. [Morphological change of intestine in the larval stage of wild goldfish (*Carassius auratus*). I. Observation on variety "Gengorobuna".] Jap. J. Ichthyol. **5** : 78-82 1 pl. 5 figs. [English summary.]

(Yudanov, I. G.) [New data on the spawning places of Atlantic-Scandinavian herrings.] C.R. Acad. Sci. URSS **112** : 1139-1141. [In Russian.]

Yuen, H. S. H. & June, F. C. Yellowfin tuna spawning in the central equatorial Pacific. Fish. Bull. U.S. **57** : 251-264.

Zahnd, J. P. *see* Clavert, J.

(Zaitzev, Y. P.) [Diagrammatic representation of the occurrence of pelagic eggs of some Black Sea fishes.] C.R. Acad. Sci. U.R.S.S. **111** 1956 : 193-194 1 fig. [In Russian.]

Zambriborshch, F. S. [Structure and function of the superbranchial organ of *Hypophthalmichthys molitrix* Val.] Zool. Zh., Moscow **36** : 587-594. [English summary.]

Zanandrea, G. Neoteny in a lamprey. Nature, London **179** : 925-926.

Zarnecki, S. *see* Rychlicki, Z.

Zelenin, A. M. *see* Irkimovich, A. I.

Zenkevitch, L. Neue Vertreter der Mittelmeer-fauna im Kaspischen Meer. Int. Congr. Zool. **14** 1953 (1956) : 113-118.

(Zheltenkova, M. V.) (1). [Critical consideration of modern methods of fish feeding in natural environment.] Trud. Sovesh. Ikhtiol. Komm. **6** 1954 (1955) : 22-39 7 figs. [In Russian.]

(Zheltenkova, M. V.) (2). [Prognosis on fish feeding conditions in Azov Sea.] Ichth. Probl., Moscou **8** : 102-106. [In Russian.]

(Zhukov, L. A.) [Tests in the pond breeding of Vioksinks *Coregonus* for its acclimatization in small lakes.] Trud. Lab. Ozerov. **5** : 270-275. [In Russian.]

(Zhuravlev, M.) [Influence of "black water" on fish in the river Kura in the Mingechaur region.] C.R. Acad. Sci. Azerbaidj **10** 1954 : 585-588. [In Russian.]

(Zusser, S. G.) [Critical remarks on the theory of tropisms as applied to the study of fish behaviour.] Trud. Sovest. Ikhtiol. Komm. **5** 1953 (1955) : 154-155. [In Russian.]

II.—SUBJECT INDEX

GENERAL

Text-books.—Physiology of fishes, Brown, M. & others; determination of fossils, Chavan & Cailleux.

Popular books.—Freshwater fishes, Schindler (2); fishes of the world, Le Danois & others; natural history of Israeli seashore, Carmin; tropical fish breeding, Axelrod & Vorderwinkler.

Biography and bibliography.—Bibliography of natural history works of Seychelles, **Peters**; of Philippine fishes, **Blanco & Montalban**; of tunas and their fishery, **Van Campen & Hoven**; method of documentation of fishery publications, **Lillelund & Tiews**; an early article on the swim bladder, **Nelson**; biographical notes on the Russian pisciculturist, **O. A. Grimm**, **Movchan & Yarmoshenko**; obituary of **V. Pietschmann**, **Kähsbauer**.

Historical.—Notes on some drawings ascribed to **J. P. Kirtland**, **Moulton**; ichthyology in China, **Nikolski** (3).

Expeditions and Collections.—Gempylids from the Bermuda Oceanographic Exped. 1929–31 and 1934, **Voss, N. A.**; "Oregon" collections from Gulf of Mexico, **Springer, S. & Bullis**; Carapidae of Monaco Oceanographic Inst., **Arnold**; method of filing specimens at Stanford Univ., **Myers & Storey**.

Techniques.—Method of making fish prints, **Goodwin**; use and construction of large fish traps, **Hallock & others**; use of tricaine as a fish tranquillizer, **Gossington**; method of sectioning small fish, **Sauerteig & Krebs**; methods of measuring external characters, **Amosov**; of fish tagging, **Volpe**; a subcutaneous plastic tag, **Butler**; method of studying feeding habits, **Borutzki**, **Fortunatova** (1); method of studying food requirements and nutrition, **Karzinkin & Krivobok**; method of calculating back growth by correlation curve, **Schindowski & Tesch**; sampling methods for determining size composition of catches, **Hennemuth**; method of removing egg membrane, **Kanoh & Yamamoto**; technique for adrenalectomy, **Vargas & Concha** (1); of collecting fish pituitaries, **Pickford** (1); use of chromatography in taxonomy, **Rechnitzer**.

ECONOMICS

Fishery research.—**Izhevski**; in Norway, **Tambs-Lyuke**; in Barents Sea, **Lee**; on Iceland-Faroe Ridge, **Magnússon** (2); tuna resources of Western Atlantic, **Springer, S.** (3); survey of pelagic fishes of E. Africa, **Williams**; population dynamics and economics, **Schaefer**.

Overfishing.—Of *Neothunnus* population, **Broadhead**; of *Cetengrulis* as tuna baitfish, **Alverson, F. G. & Shimada**; effect of heavy fishing on *Abramis* populations, **Bervald**.

Fishes and control of disease.—*Haplochromis* used for mollusc control, **Bont** (2) & (3).

Effects on fishes of industrial effluents.—Effect of mill effluent on young *Oncorhynchus*, **Alderdice & Brett**; influence of 'black water' on fishes in Kura river, **Zhuravlev**.

Dams and other obstructions affecting fisheries.—Effects of hydro-electric development on migrating *Oncorhynchus*, **Brett**.

Pisciculture and fish management.—In Africa, **Lemasson**; fish culture in rice-fields, **Bont** (1); fish production in the Vistula, **Poczopko** (1); stocking Angare river with *Thymallus*, **Egorov**; methods of studying fish productivity of lakes, **Hayes**; problems of rearing marine fishes from eggs, **Morris, R. W.**; effect of electric shocks on developing *Salmo* eggs, **Godfrey**; fish feeding, **Karpevich**; biological approach to fish feeding, **Gaevskaya**; modern methods of feeding, **Zheltenkova** (1); estimation of feeding conditions in Azov Sea, **Zheltenkova** (2); feeding of medicated diet to prevent pathogens, **Grassl** (2); use of pelleted dry food in trout hatcheries, **Grassl** (1); importance of artificial food for young *Cyprinus*, **Bodrova & others**; artificial propagation of *Acipenser*, **Manea & Mihai**; of *Coregonus* in ponds, **Zhukov**; of *Leuciscus* and *Barbus*, **Gyurko & others**; varying quality of *Acipenser* fry, **Shturbina**; results of artificial hybridization in *Cyprinus*, **Lieder**; maintenance of *Salmo gairdneri* stock by selective breeding, **Donaldson & Olson**; rearing *Esox masquinongy* in Nogies Creek, **Crossman**; management of *Chanos* nurseries in Philippines, **Rabanal & others**; causes and prevention of mortality during transport, **Ahmad**; study of survival and vitality of hatchery bred *Salmo irideus*, **Nielson & others**; use of PMA in controlling gill disease, **Allison**; resistance to dropsy obtained by Zator carpbreeding methods, **Rychlicki & Zarnecki**; control of dropsy in *Cyprinus*, **Ivasik & Roi**; experiments on *Plectroplites*, **Stephenson & Grant**; factors to be considered in acclimatization, **Shkorbatov**; behaviour in a fish pass, **Schiemenz**; poisons used for population study, **Oliva** (2); a simplified rotary fish screen, **Whalls, Shetter & Vondett**.

Fishes useful or harmful to man.—Copper acetate used as shark repellent, **Hill**; injuries caused by garfish, **Haneveld**.

Poisonous and venomous fishes.—The problem of poisonous fishes, **Wheeler**, **J. F. G.**; toxicity of fish, **Kawabata**, **Halstead** & **Judefind**; *Trachinus* stings and their treatment, **Halstead**; two fatalities from *Synanceja* wounds, **Smith**, **J. L. B.** (8); observations on *Synanceja*, **Gail** & **Rageau**.

Fishes as test animals.—Effect of radioactive chemicals on *Cyprinus*, **Kirpichnikov** & others.

Methods of fishing.—Electrical fishing, **Denzer**; electrical fishing in fresh water, **Perruche**; gear used for E. African pelagic fishes, **Williams**; gear for pelagic fishing in Philippines, **Rasalan** & **Villadolid**; goby fishing in Philippines, **Capco** & **Manacop**.

Fisheries of.—Barents Sea, **Mironova** (2); Sweden (*Esox* and *Perca*), **Alm**; Roumania (marine), **Busnita** & **Ara-chelian**; Spain, **Doumenge**; L. Victoria, **Garrod**; inland Africa, **Lemasson**; Ceylon, **Canagaratnam** & **Medcof**; Silvalin gam & **Medcof**; St. Paul and Amsterdam Isl., **Paulian**; Trinidad (shark), **Springer**, **S.** (1); Barbados (flying fish), **Hall**.

Oceanography.—Of Uruguayan coast, **Buen** (1); effect of sound waves on vertical distribution of fishes, **Beklemishev**; interpretation of echo traces, **Cushing** (1); midwater sound scattering, **Johnson**, **H. R.** & others; luminescence in a sonic-scattering layer, **Kampa** & **Boden**.

STRUCTURE

General.—External morphology of embryo, **Rhincodon**, **Reid** (1).

Tegumentary system.—Fish scales, **Grave**; growth structure of scales, **Wallin**; scales of Ophicephalidae, **Bhatti** & **Aminul Huq**; scalation in *Cyprinus*, **Dürr**; Histology of palaeoniscoid scales, **Ørvig** (2); crystal orientation in Permian scales, **Konta**.

Fins.—Dorsal fin of *Salmo*, **François**; anal rays of *Lebistes*, **Mohsen**; bony rays in adipose fin of *Synodontis*, **Sandon**; finlets detached from main fin during ontogeny in *Thunnus*, **Robins** (2); significance of selachian fin-spines, **Peyer**.

Skeleton.—Of *Archoplites*, **Dineen** & **Stokely**; of *Nystactes*, **Böhlke** (3); of *Roccus*, **Woolcott**; skull of *Balistes*, **Garnaud** (1); chondrocranium of *Eleutheronema*, **Marathe** & **Bal**; architecture of head in *Pleuronectes*, **Blok**; microstructure of dermal bone in arthrodires, **Bystrow**; endoskeletal tissues of certain Arthrodires, **Ørvig** (3); exoskeletal microstructure of certain Holoptychiids, **Ørvig** (1).

Dentition.—Study of dentine, **James**; dentition of Mugilidae, **Ebeling**; microstructure of teeth, etc. of certain Devonian Acanthodians, Arthrodires and Rhipidistia, **Gross**.

Nervous system.—Brain of fishes related to mode of life, **Povlovski**; form of synapses in teleosts, **Horstmann**; Mauthner's fibre in fishes, **Leghissa**; Mauthner neurones in larval *Lampetra*, **Whiting**; subcommissural organ in *Lampetra* and *Myxine*, **Adam**; subcommissural cells and Reissners' fibre of *Myxine*, **Atzelius** & **Olsson**; neurosecretory cells of diencephalon in teleosts, **Polenov**; torus longitudinalis in some teleosts, **Banarescu** (1); innervation of membranous labyrinth, **Casasco**; presence of a paraphysis in Selachians, **Kappers**; optic nerves of *Gambusia*, **Hamon**; a plexus in digestive tract of *Perca*, **Milokhin** (2); innervation of some Selachian fin muscles, **Barets**; brain cast of triassic palaeoniscid, **Beltan**.

Sense Organs.—Eye of fishes, **Baburina**; cone arrangement in teleost retinae, **Lyall** (2); density of cones and resolving power of retina, **Tamura** (1); retinal pigments in deep-sea fishes, **Denton** & **Warren**; retina of *Bathylagus*, **Vilter**; retina of *Sebastes*, **Wunder**; sensory canals of head in *Wallagonia*, **Kapoor**, **A. S.**; Cutaneous sense organs of *Rita*, **Bhatti** (2); barbels of *Rita*, **Bhatti** (1).

Luminous organs.—Pre-caudal photophores of *Lampadena*, **Anadon**; photophores of *Porichthys*, **Nicol**.

Otoliths.—Of Pliocene teleosts, **Papp** & **Thenius**; from London Clay of Bognor Regis, **Stinton** (1); from Miocene New Zealand, **Stinton** (2); from Jurassic Western Germany, **Weiler** (3).

Lateral line.—Pit organ system of some fishes, **Satô**.

Muscles.—Myomeres of fishes, Marshall, J. R.; lateral muscles of *Trachurus*, Hasan; muscles of *Rutilus*, Lobintzev; muscles of skull in *Raja*, Gottenbos; muscular tissue of auricle in *Anguilla*, Couteaux & Laurent.

Digestive system.—Alimentary canal of *Basilichthys*, Carlo & Lopez; pharyngeal pockets in *Gadusia*, Kapoor, B. G. (3); callous pad of pharyngeal apparatus in Indian Cyprinids, Kapoor, B. G. (4); gastric epithelium in young *Leuciscus*, Bernard.

Swimbladder.—Of *Arapaima*, Migdalski; of *Ophicephalus*, George; unusual swimbladders in *Cyprinus*, Schreiter.

Glands.—Endocrine organs of Anabantids, Forselius; pineal organ in fishes, Kamer; paired pineal organs, Edinger; hypophysis of some teleosts, Honma (3); of *Lebistes*, Vervoort; of *Stichaeus*, Honma (1); adrenal tissues of some fishes, Oguri & Hibiya (2); adrenals of *Sicyases*, Vargas & Concha (1); pancreas, spleen and liver of *Thunnus*, Vallmitjana & Gadea; histology of *Hippocampus* kidney, Gabe; pharyngeal glands of *Haplochromis*, Stolk (11); Stannius bodies of teleosts, Oguri & Hibiya (1); glands associated with digestive system of *Cyprinus*, Santa & Pollinger; hatching gland of *Huso*, Ignatyeva (1).

Electric organs.—Bulbous structure in Gymnotids, Szabo (2); electric discharge in Mormyrids controlled by 'paraseptal nucleus,' Szabo (1).

Respiratory system.—Oral valves of some teleosts, Kapoor, B. G. (2); peculiarities of branchial apparatus in *Clupea*, Shmalganz; gill apparatus of *Hypophthalmichthys*, Verigin; supra-branchial of *Hypophthalmichthys*, Zambriboreshch; gills of *Lampetra*, Morris, R.; secretory cells in gills of *Mastacembelus*, Kapoor, B. G. (1).

Vascular system.—Of liver of *Cyprinus*, Friedrich; afferent branchials of *Ophicephalus*, Bhuiya & Siddiqui; intestinal blood system of Petromyzonidae, Baxter.

Reproductive system.—Spermatozoa of teleosts, Villmitjana; gonads of *Oncorhynchus*, Ivanova, S. A.; urogenital apparatus of ♂ and ♀ *Sebastes marinus*, Magnusson (1); egg membrane of fishes, Sterba.

Teratology and pathology.—Teratological example of *Raja*, Barraclough; abnormal vertebral column in *Leuciscus*, Greven; deformation of pectoral fin of *Acipenser*, Huzum; *Esox* with no pelvic fins, Herbst; Janus monstrosity in *Oncorhynchus*, Honma (4); teratological examples of *Wallago* and *Mystus*, Sarkar & Kapoor; histopathology of kidney disease, Wood, E. M. & Yasutake; multiple cysts in nervous system of *Cichlasoma*, Stolk (8); cerebral cysts and abnormal glands in *Lebistes*, Stolk (9); polycystic kidneys in *Moenkhausia*, Stolk (2); coarse granulocytes in *Pterophyllum*, Stolk (6); changes in pituitary of *Cichlasoma* due to thyroidal tumour, Stolk (1); gonadal tumour in *Sardina*, Santos Pinto (2); fibroma of heart in *Lebistes*, Stolk (7); rectal fibroma in *Lebistes*, Stolk (10); a sarcoma in *Pseudocorynopoma*, Duijn; renal adenocarcinoma in *Barbus*, Stolk (7); adenoma of pharyngeal glands in *Haplochromis*, Stolk (12); adenoma of swim bladder in *Lebistes*, Stolk (12); carcinoma in *Colisa*, Stolk (4); carcinoma of kidney in *Thayeria*; skin fibromas in *Malapterurus*, Stolk (5); glands of an acromegalic *Carassius*, Stolk (3).

Comparative morphology.—Of mid-brain of *Protopterus*, Dorn; significance of accessory denticles in teeth of Lamnid and Scapanorhynchid sharks, Ghlikman (1).

Fossilization.—Breder.

Restorations.—*Pharyngolepis*, Smith, I. C.; *Semionotus capensis*, Guffroy.

DEVELOPMENT

General.—Early development of *Bregmaceros*, Clancey; of *Chondrostoma*, Točko, Tosko; of *Clupea* in water of high salinity, Krizhanovski (1); of *Esox*, Shamardina; of *Galeichthys*, Ward; of *Psenes*, Legaspi; of *Wallagonia*, Mazumdar; influence of light on developmental stages, Lyubitskaya; developmental physiology of scales, Wallin.

Eggs.—Of some teleosts, Wickler (4); *Symphysodon*, Wickler (1); gynogenesis in *Carassius*, Busnita & others (2); respiratory importance of pigment in eggs of Salmonoids, Soin; effect of light on movement of *Salmo* egg, Thomopoulos (3); development of *Salmo* egg in absence of oxygen, Devillers & others; development of perivitelline

space in oocytes of *Acipenseridae*, **Sadov (1)**; differentiation of blastoderm after removal of covering layer, **Devillers & others**; use of Ringer's solution in prolonging life of unfertilized eggs, **Yanagimachi (1)**.

Embryos.—Of *Clupea*, **Volodin**; of *Cobitis*, **Kojhanova**; of *Cottus bubalis*, **Thomopoulos & Bauchot**; of Aral Sea *Rutilus*, **Gosteeva**; peculiarities in *Vimba*, **Smirnova, E. N. (1)**; lactic acid production in *Oryzias* embryos, **Ishida & Taguchi**; optokinetic testing of cyclopean *Fundulus* embryos, **Rogers**.

Larvae and young.—Of some Volga and Don river fishes, **Vasnetzov & others**; of *Abramis*, *Rutilus* and *Lucioperca*, **Dmitrieva (1)**; of *Alosa kessleri*, **Braginskaya**; of *Blennius*, **Wickler (2)**; of *Odontamblyopus*, **Dôtu (4)**; of *Pomatomichthys constanciae*, **Cavaliere**; of *Symphysodon*, **Wickler (1)**; changes in *Oncorhynchus* fry during absorption of yolk, **Shiraishi & Uchida**; sexual maturity in ammocoete larvae, **Zanandrea**.

Organogeny and histogenesis—Origin of vascular couples in *Petromyzonidae*, **Baxter**; of digitiform gland in *Plagiostomes*, **Pera**; of scales in *Rutilus* and *Leucaspis*, **Balon (1)**; histogenesis of dorsal fin components in *Salmo*, **Francais, François**; of caudal fin in teleosts, **Bhatti**; of lateral line in *Caecula* and *Ophidion*, **Thomopoulos (2)**; origin of acoustico-facialis complex in *Lampetra*, **Fisk**; cell migration in embryonic brain of *Torpedo*, **Bergquist**; growth of retina in *Salmo*, **Lyll (1)**; organogenesis of *Salmo trutta*, **Bernard**; gonad differentiation in *Amia*, **Ancona (2)**; in *Salmo trutta*, **Ashby (1)**; in Teleosts, **Ancona (3)**; postembryonic development of pronephros in *Clupea*, **Holst-voogd**; changes occurring in liver during vitellogenesis, **Clavert & Zahnd (1) & (2)**.

Effect of external factors.—On development of *Esox*, **Tschörtner**; influence of light conditions no development of *Acipenser* larvae, **Semenov**; influence of temperature on skeleton, **Orska**; low temperature effects on stimulation of growth of oocytes, **Aleev (1)**.

Regeneration and degeneration.—Regeneration of teleost scales, **Aoyama**; of caudal fin of *Oryzias*, **Mori, H.**; of liver in *Salmo*, **Faktorovich (1)**; of

melanomas, **Ermin & Gordon**; reduction of eye and associated structures in blind cave fishes, **Quaghebeur**.

Abnormal development.—Transplantation of melanomas, **Humm, Clark & Humm**; development of *Salmo*, *Esox* and *Rutilus* in paraffin oil, **Domurat**.

PHYSIOLOGY

Senses.—Visual perception, **Tamura (1)**; adjustment of cones to intensity of illumination, **Tomura (2)**; absorption of light by crystallin, **Denton**; **Motais (2)**; colour sensitivity in *Anoptichthys*, **Thines & Kähling**; experiments on behaviour of blind and blinded fishes, **John**; scent perception by *Anguilla*, **Teichmann**; temperature perception, **Bardach & Bjorklund**; sensitivity of *Carassius* to heat stimulation, **Bardach**; function of ampullae of Lorenzini, **Murray**.

Nervous system.—Instinct and brain function in *Gasterosteus*, **Segaar**; experiments on neural crest of *Lampetra*, **Newth**; innervation of photophores in *Porichthys*, **Nicol**; two motor systems in lateral muscle of *Tinca*, **Barets & Le Touzé**; results of breakage of Reissner's fibre, **Olsson**; regeneration of cranial nerve after severing, with re-innervation of muscles, **Arora & Sperry**.

Digestion.—Relation between food and type of nervous system in digestive tract in some Cyprinids, **Milokhin (1)**; nutrition in Cyclostome larvae, **Schroll**; relation between pyloric caeca and type of food, **Svetovidov (1)**; rôle of leucocytes in digestion, **Smirnova, L. I.**

Metabolism.—Of *Carassius* acclimated to low oxygen concentrations, **Prosser & others**; in young *Cyprinus*, **Picos**; effect of temperature on metabolism in *Cyprinus*, **Picos & Todicescu**; metabolism and growth of Salmonid fry at varying temperatures, **Mekhanik**; metabolism of fishes, **Brown, M. & others**.

Respiration.—Oxygen consumption of *Cyprinus* fry, **Syazuki & Hayama**; dependence of breathing frequency on temperature in *Cyprinus*, **Meuwis & Heuts**; cutaneous respiration in *Neogobius*, **Shulman**; respiration of *Remora*, **Strasburg**; oxygen consumption of some fishes, **Stefan**; survival at differing concentrations of dissolved O and CO₂, **Alabaster, Herbert & Hemens**.

Blood.—An isoagglutinin system found in *Ictalurus*, **Cushing & Durall**; results of an electro-cardiogram of *Tinca*, **Serfaty & Raynaud**; alterations in lactic acid level following muscular activity, **Black** (1).

Osmotic relations.—Osmoregulation in *Lampetra*, **Morris, R.**; in egg and early stages of *Lampetra*, **Hardisty**; permeability of chorion of *Fundulus* egg, **Kao & Chambers, R. & E. L.**; effect on *Gobius* of alteration of salinity, **Cordier, Barnoud & Brandon**; gas exchange in *Neogobius* in Azov Sea, **Shulman & others**; adaptation of *Oryzias* to salt water, **Yanagishima & Mori**; osmoregulation in *Salvelinus*, **Gordon, M. S.**; effect of hormones on osmoregulation, **Lockley**; osmotic behaviour of cortical alveoli, **Kusa**; role of pituitary, **Tuurala**.

Locomotion and equilibration.—Reaction of blind *Carassius* to rotation, **Jones, F. R. H.**; functional importance of lateral body orientation in Heterosomata, **Aleev** (2); characteristics and functions of fins, **Aleev** (5); musculature and swimming, **Marshall, J. R.**

Swim bladder.—Source of oxygen in swim bladder of *Gadus*, **Scholander & others**; gas composition in bathypelagic fishes, **Kanwisher & Ebeling**; analysis of gas content, **Tait**; metabolism of gases, **Valérien**.

Influence of temperature.—On hatching gland of *Acipenser*, **Ignatyeva** (2); on survival in low tensions of oxygen, **Downing & Merckens**.

Colour.—Formation of carotenoids, **Politis** (2); formation of melanin pigment, **Politis** (1); genesis of melanophores and melanin, **Pickford & Kosto**; effect on chromatophores of induced epilepsy, **Branzei & Jitariu**.

Endocrinology.—Effect of hormones on euryhalinity of young *Anguilla*, **Motais** (1); influence of hormone on halotropism in young *Anguilla*, **Fontaine & Motais**; effect of hypophysectomy on respiratory metabolism in *Anguilla*, **Fontaine, Quérière & Raffy**; effect of radio-active iodine on thyroid tissue of *Anguilla*, **Olivereau** (2); changes occurring in pituitary of *Cyprinus* during gonad maturation, **Irkimovich & Zelenin**; response of hypophysectomized *Fundulus* to thyrotropin, **Pickford** (2); sexual maturity in presence of un-metamorphosed endostyle in *Lampetra*

ammocoetes, **Zanandrea**; neurosecretion in *Salmo*, **Arvy, Fontaine & Gabe**; effect of thyroxine on chloride exchange in *Salmo*, **Baraduc**; effect of adrenalectomy on *Sicyases*, **Vargus & Concha** (2); neurosecretion in fishes, **Stutinsky**; hypophysis and thyroid glands of fishes, **Olivereau** (1); response of hypophysectomized fishes to mammalian and fish growth-hormone, **Pickford** (1); spawning reflex factor of pituitary, **Atz & Pickford**; pituitary, *nucleus preopticus*, role in osmoregulation, **Tuurala**; presence of cortisol in adrenal, **Bondy, Upton & Pickford**; hormones influencing melanogenesis, **Pickford & Kosto**.

Electric organs.—Properties of electrophax membrane of *Electrophorus*, **Altamirans**.

Electrical properties.—Effect of galvanic current on heart of *Esox*, **Acolat**; 'spike' potentials produced by *Petromyzon*, **Kleerekoper & Sibakin**; cardiac electric activity of *Sicyases*, **Concha & Vargas**; measurement of electrical activity of cardiac tissues, **Gargouil & Coraboef**; galvanotaxis in fishes, **Spiecker**.

Reactions to chemicals.—Effect of insecticide on young *Cyprinus*, **Yoshihara & Fujioka**; factors affecting toxicity of zinc to *Lepomis*, **Cairns & Scheier**; effect of agricultural chemicals on *Misgurnus*, **Kubota & others**; resistance of skin to natural and artificial attack, **Acolat & Muller**; toxicity of un-ionized ammonia, **Merckens & Downing**.

Effect of X-rays etc.—Survival of *Carassius* at low temperatures after irradiation, **Gros & Bloch** (1) & (2); effect of radioactive chemicals on *Cyprinus*, **Kirpichnikov & others**; radioactivity in *Katsuwonus*, **Saiki & others**; damage by X-rays to gonads of *Lebistes*, **Kessler**; effect of radiation on behaviour of egg cells, **Neifakh** (2).

Tropisms.—Photo-orthokinesis in larval Salmonids, **Woodhead**; reaction to light in migrating salmon and factors influencing it, general survey, **Fields**; reactions to light, **Privolnev**.

BIOCHEMISTRY

Chemical composition of some Philippine fishes, **Sulet & others**; protein content of some fish muscle, **Alexander**; amino acids of pyloric caeca of *Katsu-*

wonus, Kakimoto & others; nucleic acids of *Latimeria*, Vialli; synthesis of vitamin A by *Gambusia*, Grangaud & others; Vitamin A content of fish flesh, Junker; B-vitamins in pyloric caeca of *Katsuwonus*, Kakimoto; presence of thiaminase in freshwater fish organs, Suomalainen & Pihlgren; effect of raised temperature on tissue chemistry of *Myoxocephalus*, Musacchia & Clark; fat content of *Pleuronectes flesus*, Meyer-Waarden & R  benberg; distribution of fat in some flatfish, Morawa; seasonal variation of fat content in *Salmo letnica*, Sapkarev (2); acetylcholine cycle in electric organs, Kuwabara; lipids of oocytes of *Acipenser*, Ginzburg; liver and muscle lipids in Arctic fishes, Musacchia & others; changes occurring in distribution of lipids in *Esox testis*, Loftis & Marshall; enzymes of hatching glands of *Vimba*, Baburina & Buznikov; skin carotenoids of *Crenilabrus*, Abolins & Abolins-Krogis; electrophoretic study of fish albumin, Drilhon & Fine; electrophoresis of shark serum, Starr & Fosberg; constituents of plasma of *Scyliorhinus*, Brull; constituents of blood serum of *Anguilla*, Drilhon & others; changes in blood levels of lactic acid in *Salvelinus*, Black (2); presence of myosin and actin in electric organ of *Torpedo*, Citterio & others; Maldacea & others; intestinal sugar absorption of *Anguilla* in fresh and salt water, Cordier & Maurice (1); intestinal absorption of sugars in *Esox*, Cordier & Maurice (2); pH of intestine of *Scorpaena* and its effect on absorption of glucose, Cordier & Worbe; suprarenal of Selachians, Turchini; proteolytic activity of thyroid in *Scyliorhinus*, Clements; histochemical study of developing *Clupea* egg, Yamamoto, T. S.; cytochemical study of fish eggs, Petrova; chemical differentiation of proteins during spermatogenesis, Alfert; constituents of oocytes, Yamamoto, K.

REPRODUCTION AND SEX

Age and size at sexual maturity.—Of *Capoetobrama*, Maxunov; length of *Neothunnus*, Yuen & June; "neoteny" (paedogenesis) in *Lampetra*, Zanandrea.

Differences between the sexes.—Sexual dimorphism in *Rutilus pigus virgo*, Misik.

Sex ratio—in *Notropis*, Reed (2).

Spawning season and place.—Spawning areas of *Abramis* in Vistula lagoon, Dziekonska; spawning places of Atlantic *Clupea*, Yudanov; of Sundsvall Bay *Coregonus*, Lindroth (1); egg site selection by *Etheostoma*, Winn; spawning season of *Galeichthys*, Ward; *Hippoglossoides*, Bagenal (1); of *Istiophorus*, Gehringer; of *Neothunnus*, Yuen & June; spawning grounds of *Labeo* in Katanga Province, Bont & Maes; breeding place of *Rastrelliger*, Kuthalingam; of Portuguese *Sardina*, Cruz (1).

Factors influencing spawning.—Problems of winter spawning *Acipenser*, Barannikova; reproductive rate of *Etheostoma* controlled by temperature, Hubbs, C. & Strawn (1).

Breeding habits.—Pre-nuptial behaviour of *Alosa*, Medcof; breeding behaviour of *Anableps*, Trochanis; nest building of *Arapaima*, Migdalski; spawning habits of *Dascyllus*, Garnaud (2); reproductive behaviour of *Gambusia*, Warburton & others; breeding colouration of female *Gasterosteus*, Drapkin; breeding habits of *Macropodus*, Pinter; spawning behaviour of *Notropis*, Reed (1); of *Petersius* in aquarium, Poersch; spawning behaviour of *Rhodeus*, Wiekema; of *Wallagonia*, Mazumdar.

Reproductive cycle.—In annual fishes, Myers; in *Ditrema*, Ishii; in *Jenynsia*, Turner; in ♂ and ♀ *Sebastes marinus*, Magnusson (1); spawning periodicity in *Acipenser*, Roussow; sexual photoperiodicity in *Notropis*, Harrington; factors influencing sexual cycle in *Perca*, Morozova, T. E.

Oogenesis and spermatogenesis.—Size of ovarian eggs in *Hemichromis*, Peters; spermatogenesis in *Muraenesox*, Nishikawa; size of nuclei during development of oocytes, Sadov (2).

Reproduction.—Of *Acanthorhinus*, Bjerkan; of *Cottus bubalis*, Thomopoulos & Bauchot; ecological adaptations in Comephoridae, Koryakov; function of testis in testis in various types of spawning, Butzkaya.

Fertilization.—Results of insemination of *Carassius* eggs with sperm from other genera, Suzuki (2); structure and activity of spermatozoa in *Clupea*, Yanagimachi (2); manner of sperm entry into egg in *Clupea*, Yanagimachi (3); cytological and cytochemical in-

vestigations on fertilization in *Lampetra*, Chubareva; results of cross fertilization with different genera, Suzuki (1); change in X-ray sensitivity during fertilization, Neifakh (1).

Parthenogenesis.—In Sakhalin *Clupea*, Krizhanovski (2).

Hermaphroditism.—Sex reversal in teleosts, Ancona (1); in *Coris*, Reinboth.

Hormones and sex.—Effect of hormone injection on gonads of *Anguilla*, Ancona (5); induced spawning in *Clarias*, Ramaswami & Sundararaj (2); induced spawning in *Heteropneustes*, Ramaswami & Sundararaj (1); effect of hormone on vas deferens of male *Monacanthus*, Ishii & Egami; inhibition of male characteristics in female *Oryzias*, Egami; effect of steroid hormones on *Salmo alevins*, Ashby (2); effect of pituitary extract on ovary, Kirshenblat; effect of hormones on sexual differentiation, Vallowe.

Number of eggs produced.—By *Ameiurus*, Sedlár; by *Arapaima*, Migdalski; by *Dascyllus*, Garnaude (2); by *Hippoglossoides*, Bagenal (1); by *Hirundichthys*, Hall; annual variations in fecundity, Bagenal (2).

Parental care.—Oral gestation in *Galeichthys*, Ward; oral incubation in *Opisthognathus*, Böhlke & Chaplin; parental care in *Nannacara*, Kuenzer.

EVOLUTION, VARIATION AND GENETICS

Evolution.—Of actinopterygians, Saint-Seine; of Carangidae, Aleev (7); Of Dipnoi, Lehman (1); of vertebrate teeth, Buistrov; of pelagic eggs, Orton.

Hybrids.—Survival rate of Etheostominae hybrids, Hubbs & Strawn (3); F₁ hybrids of *Lepomis gibbosus* × *L. macrochirus*, Lagler & Steinmetz; *Rutilus rutilus* × *Chalcaburnus chalcoides*, Nalbandoglu; evidence of introgressive hybridization in *Salmo*, Miller, R. B. (2); intraspecific hybrids and hybrid vigour, Donaldson, Hansler & Buckridge; sperm viability as a factor in hybridization, Hubbs, C. (3); list of natural hybrids, Slastenenko.

Genetics.—Influence of environment on sex in *Anguilla*, Ancona (4); hereditary differences in populations of *Xiphophorus*, Gordon, M.; genetical colour-varieties in aquarium fishes, Ladiges.

Chromosome studies.—In *Eptatretus*, Nogusa.

Raciation and speciation.—Speciation in Coregonids, Svårdson (1); Intraspecific relationships in fishes, Klyuchareva; evidence of phenotypic or genotypic effects of interference by man on fish populations, Miller, R. B. (2).

Albinism, etc.—Gene for albinism present in *Anoptichthys*, Sadoğlu.

Biometric studies.—On *Merluccius*, Franca (1); on *Rutilus pigus virgo*, Misik; on *Sardina* and *Sardinella* in Castiglione Bay, Dieuzeide & Roland (3); on Angolan *Sardinella*, Monteiro; on *Thunnus thynnus*, Genovese.

Phylogeny.—Origin of Vertebrates, Berrill; Lehman (3); axial rotation and origin of vertebrates, Stanley-Jones; first tetrapods and Crossopterygii, Jarvik; phylogeny of the Agnatha, Balabai (1).

ECOLOGY AND HABITS

General bionomics.—Of *Blennius pholis*, Qasim; of *Bregmaceros*, Clancey; of *Chaenobrythus gulosus*, Larimore; of *Cottus gobio*, Smyly; of *Lagodon*, Caldwell; of *Lepomis* in an Iowa lake, Mayhew (1); of *Luciogobius*, Dôtu (3); of *Psenes*, Legaspi; of *Salmo* and *Salvelinus* in Murmansk region, Vladimirskaya (2); of *Sardinops ocellata*, Davies (3); of *Schizothorax argentatus* in Lake Balkhash, Savina; of *Squalius*, Hoffmann; treatise on marine ecology, Hedgpeth.

Age and growth.—Age estimation of *Anguilla*, Rahn; maximum size and weight of *Arapaima*, Migdalski; growth of *Aspius*, Troitzkii; Length/weight relationship in *Astroconger*, Okada & Suzuki; growth of *Carpiodes*, Buchholz; condition factor of *Chrysophrys*, Cassie; age composition of *Manx Clupea*, Bowers (1), (2), (3); age and size of *Manx Clupea*, Smith, W. C.; growth of *Cyprinus*, Menzel & Steffens; growth rhythm of young *Cyprinus*, Caraiman; growth of *Engraulis* post larvae, using vertebral counts, Hayashi & Suzuki; age and growth of Irish *Esox*, Austin; growth rates of *Esox* and *Scardinius*, Healy (2); size related to feeding of young *Gadus*, Mironova (1); growth rate and size groups of *Hilsa*, Sarkar; growth of *Ictalurus*, Harrison; of *Istiophorus*

americanus, de Sylva; of *Lampanyctus*, Bolin; size differences in *Merluccius*, Matta; growth of *Micropogon*, Haven; of a 'stunted' population of *Micropterus*, Suttkus (1); study on Adriatic Mugilidae, Moravic; age and growth of *Mullus barbatus* in Israel waters, Gottlieb; growth rate of *Notropis*, Reed (2); growth of *Perca*, *Lucioperca* and *Acerina* in north German waters, Tesch; growth of exoskeleton in *Pteraspis dunensis*, Fahlbusch.; Growth of *Salmo trutta* in Lake Rensjön, Runnström; of Loch Kernsary *Salmo*, Swan (1); some large Irish *Salmo salar*, 'Avondhu'; growth of Irish *Salmo*, Healy (4), Twomey, Went (2), Went (6), Went & Vickers; growth of *Salmo* before and after raising of lake level, Frost (1); growth of Salmonid fry at differing temperatures, Mekhanik; of Portuguese *Sardina*, Cruz (1); of *Sardina* in Jugoslav waters, Muzinic; of *Stizostedion*, Rose; length/weight relationship in *Xiphias*, Postel (1); relation between growth-rate and density of population, Oliva & Frank; influence of size on growth-rate, Larkin, Terpenning & Parker; relation between food supply and condition coefficient, Ellis & Gowing; principles of fish growth, Aleev (3); Lee's phenomenon, Kuznetsov.

Fish marking experiments.—Recaptures of tagged *Alosa*, Vladyskov (1); experiments on *Clupea*, Sahrhage; results of marking *Gadus* in Faroes, Joensen; of Faxa Bay *Gadus*, Jónsson; tagging study on *Micropterus*, Kimsey (2); tagged *Microstomus* recaptured after six years, Best (2); results of *Oncorhynchus* tagging, Milne; results of *Salmo* tagging in Labrador, Blair (1) & (2); experiments on fishes in Arctic Alaska, Wohlschlag.

Scale reading etc.—Of north German Percidae, Tesch; validity of scale-reading in *Cirrhitina*, Jhingram.

Population studies.—*Abramis brama* of the Vistula, Poczipko (2); *Clupea* of southern North Sea, Cushing & Burd; of Atlantic *Clupea*, Biryukov; Leim & others; *Coregonus* of Sundsvall Bay, Lindroth (1); estimation of *Lepomis* population in Iowa, Lawrence; German Bight *Pleuronectes*, Kotthaus; *Oncorhynchus keta* in Amur basin, Birman (2); comparison of three races of *Oncorhynchus nerka*, Vernon; North Sea

Thunnus, Tiewes; *Thymallus* in Murmansk lakes, Vladimirskaia (3); populations of Iowa ponds, Carlander & Moorman.

Abundance.—Estimate of number of *Sardina pilchardus* in Channel, Cushing (2).

Fluctuations of stock.—Swedish *Esox* and *Perca*, Alm; *Oncorhynchus* in Kamchatka waters, Krogus & Krokhin; self regulation of *Osmerus* stock in Zhizhitzk Lake, Abrosof & Agapov; fluctuations of *Parophrys vetulus* stock, Ketchen; causes of fluctuation in Baltic *Salmo*, Lindroth (2); Svårdson (2); Portuguese *Sardina*, Cruz (2); fluctuations due to environmental changes, Moiseev (1).

Ecological studies.—In Polish waters, Pliszka; some Hungarian waters, Jaszfalusi; Carpathian rivers, Starmach; Borcea-de-Jos lakes complex, Danube, Popescu-Gorj & others; fishes of a German reservoir, Miegel (1); fishes of Niger Delta, Daget; fisheries study of a Florida lake, Moody; brackish water systems in Mie Prefecture, Okada & Kubota (1); adjustment in a disturbed estuary, Reid (2); Palaeoecology of *Agnatha* (bibliography), Robertson, G. M. (1) & (2); Palaeoecology of Haskell Limestone (with palaeoniscids), Miller & Swineford; Palaeoecology of fishes, bibliography, David.

Ecological Surveys.—Of Baffin and Alazan Bays, Texas, Breuer; Upper Laguna Madre, Texas, Simmons; trawling survey off Algerian coast, Dieuzeide & Roland (1); off the Gold Coast, Salzen.

Relations with physical environment.—Of *Blennius*, Lecal; temperature selection by *Cyprinus*, Pitt & others; effects of storms on shallow water fauna, Robins (1); effect on growth and breeding of repeated variations in river level, Moskalenko; survival of fish in water at low temperatures, Scholander; size of marine fishes invading fresh water, Gunter; poisoning from red tide and its causes, Anon. (2).

Special Habitats.—Emergence of fishes from Californian subterranean waters, Herald; blind fishes, Lüling; annular fishes, Myers.

Introduction and acclimatization.—Introduction of *Abramis* into Khristoforov reservoir, Melnikov; *Ophiocephalus* in Japan, Okada; *Carassius* into Veselovsk reservoir, Shchetinina; results of acclimatizing *Coregonus* in Roumania, Busnita & others (1).

Aestivation and hibernation.—Drought survival of eggs and conditions of life in *Nothobranchius*, Hansen.

Food and feeding habits.—Feeding habits of *Acanthogobius*, Therapon, *Tribolodon* and *Oryzias*, Imamura & Hashitani; food of *Anguilla* in Baltic, Murina; *Ameiurus*, Frank; *Aplodinotus*, Moen; *Arapaima*, Migdalski; *Aspius*, Vasiliu & Nicolau (2); influence of light on feeding of *Blicca*, Dudek; food of *Coryphaena*, Williams & Newell; young *Esox*, Makkoveeva; young *Istiophorus*, Gehringer; *Mugilidae*, Ebeling; *Notropis*, Reed (2); *Oncorhynchus masu*, Semko; *O. tshawytscha*, Merkel; seizing of food from ground by *Osteoglossum*, Heck; food of *Parathunnus* and *Neothunnus*, King & Ikehara; *Perca* in Volga delta, Ivanova, M. N.; feeding habits of *Percarina*, Kanaeva; *Pleuronectes* larvae, Shelbourne; *Rastrelliger*, Kuthalingam; Caspian *Rutilus*, Novikova; *Salmo trutta*, Nilsson; food of *Sander*, Vasiliu & Nicolau (1); *Sardinops ocellata*, Davies (2); *Scyliorhinus* feeding on the nudibranch, Tritonia, Stephen & others; food of *Sebastes*, Magnusson (3); *Trachurus*, Pora & others; feeding habits of *Vimba*, Vasiliu & Costea; of some pelagic fishes, Tokarev; of fishes from an Iowa lake, Kutkuhn; of Veselovsk reservoir fishes, Kruglova; of Kuyu-Mazar reservoir fishes, Abdullaev; food of Gruzian fishes, Kokhiya (1) & (2); role of plankton in nutrition of oriental pond-fishes, Vaas; feeding rhythm of fry, Olifant; use of sense organs in feeding, Andriyashev; adaptations to feeding on large, armed prey, Fedorov.

Migrations and movements.—Of *Clupea*, Biryukov; *Coryphaena* off E. Africa, Williams & Newell; Bear Island *Gadus*, Trout; *Oncorhynchus*, Birman (3); *Oncorhynchus* in western North Pacific, Taguchi; diurnal activity of *Perca flavescens*, Brown & Rosen; migrations of *Salmo*, Azbelev & Lagunov; L. Rensjón *Salmo trutta*, Runnström; movements of *Salmo* off N.E. coast of England, Hartley & Brayshaw; Irish

Salmo salar, Toner; Went (1); Went & Vickers; *Salmo* in home territory, Miller, R. B. (1); factors determining age and season of seaward migration of smolts of *Salmo*, Went (5); *Seriola* along Pacific coast of Japan, Mitani; *Trachurus* off the Roumanian coast of Black Sea, Nicolae & Cautis; daily rhythmic behaviour of some marine fishes, Hempel; migratory instinct in fishes, Kozlovski; movements of spawning population of *Eopsetta*, Alverson, D. L. & Chatwin; spawning migrations of *Oncorhynchus gorbusha* affecting size, Birman (1); tenacity of age of spawning migration in a population or fraction of a population through several generations in *Salmo*, Went (5).

Behaviour.—Of *Clupeonella* in captivity, Nikonorov; *Electrophorus*, in captivity, Boursot; Black Sea fish in winter, Aslanova; study of fish behaviour, Zusser.

Social behaviour.—Aggregational behaviour of *Cottus*, Greenbank; method of fighting by *Nannostomus*, Wickler (3); biological significance of fish shoaling, Nikolski (1); schooling behaviour of some fishes, Springer, S. (2).

Relations with other organisms.—Effect of predators on size of population, Fortunatova (2).

Symbiosis and other associations.—Cleaning of one species by another; association for concealment of predator with harmless fish (repetition of 1955 report), Eibl-Eibesfeldt.

Methods of offence and defence.—Avoidance of *Scorpaenichthys* eggs by predators, Pillsbury.

Diseases and parasites.—Cauliflower disease of *Anguilla*, Lühmann & Mann; diseases of hatchery *Salmo* fed on artificial food, Faktorovich (2); a bacterial infection of *Cichlids* in captivity, Nigrelli & others; diseases caused by bacteria, Rushton (1) & (2); protozoan parasites of *Gadus*, *Callionymus* and *Microstomus*, Noble; parasites of a population of *Phoxinus*, Dalenius; *Sardina* parasitized by *Peroderma*, Dieuzeide & Roland (4); parasitic infestation of gonad of *Sardina*, Santos Pinto (1); *Clinostomium* parasitising *Schilbeodes*, Schwartz; presence of the fungus *Ichthyosporidium* in *Serranus* and *Polyprius*, Reichenbach-Klinke;

parasites of *Xiphias*, Postel (1); of some freshwater fishes of Roumania, Radulescu & Vasiliu-Suceveanu.

Mortality.—Causes of mass mortality in Oka river, Kozlov; possible cause of mass mortality, Bonte.

DISTRIBUTION

a. GENERAL

Habitat of early vertebrates, Robertson, J. D.; Atlantic origin of some fish groups, Svetovidov (3); diagram of distribution of fish eggs, Zaitzev.

b. MARINE

General.—Effect of temperature changes on distribution in E. Mediterranean, Oren; Zooplankton (including fishes) of western Mediterranean, Alvarino (3); Zooplankton of Spanish waters, Alvarino (4); indicator species and fish eggs and larvae from Newfoundland waters, Alvarino (1) & (2); Zoogeography of Labrador fishes, Backus (1); Zoogeographic study on Japanese Soleidae, Ochiai; vertical distribution of post-larval fishes of Florida current, Bsharah.

Arctic.—Alaska, Mohr, Wilimovsky & Dawson; Barents Sea, Barsukov (3).

North temperate and subarctic.—Aleutians, Welander, Alverson & Bergman; Behring Sea, Mednikov & Prokhorov; Labrador, Backus (1), Gordon & Backus; Iceland and Greenland, Kotthaus & Kreff; Sweden, Curry-Lindahl; Jülin; Scotland, Rae & Wilson; Bristol Channel, Bassindale & Barrett; British coast, Wheeler, A. C.; Gironde, France, Bauchot & Lubet; Portugal, Albuquerque; Corsica, Houdeimer (1) & (2); Algerian waters, Dieuzeide & Roland (2); Mediterranean, Padoa & others; Madeira, Maul; North Atlantic, Nybelin; Western North Atlantic, Caldwell & Briggs; Bermuda, Schultz (2); British Columbia, Welander, Alverson & Bergman; Gulf of Maine, Scattergood & Coffin; New England and Massachusetts, Mather & Gibbs; Long Island Sound, Morrow (1); Alabama coast, Boschung; Chesapeake Bay, Massmann; Monterey Bay, California, Fast; Southern California, Norris; Texas, Kemp; Leary (1) & (2); Florida, Bigelow & Schroeder; Phillips; Robins (1); Wood, F. G.; North Pacific,

Welander & others; China, Fowler (1); Palau Isl., Aoyagi; Japan, Abe (1); Dôtu (1); Kamohara (2); Kuroda (2); Kuroda (3); Kuronuma & Yamaguchi; Maruyama; Oshima (1); Tomiyama & Abe; Yoshida & Ito; Riu-Kiu Islands, Kamohara (3).

Tropical.—Red Sea, Tortonese; Senegal and Gold Coast, Briggs; East Africa, Smith, J. L. B. (1); Williams; South and East Africa, Smith, J. L. B. (13); Mozambique, Smith, J. L. B. (3), (5) & (12); Aldabra, Smith, J. L. B. (2), (3) & (4); Seychelles, Smith, J. L. B. (4); W. Indian Ocean, Smith, J. L. B. (9), (10) & (12); Eastern Pacific, Clemens; Pacific, Otsu & Yoshida; North Borneo, Inger; Hawaii, Schultz (2); Gulf of Mexico, Briggs & Caldwell; Grey; Kanazawa; Mead (2); Schultz (2); Springer, S. & Bullis; Springer, S. & Thompson; Woods; West Indies, Walters (2); Bahamas, Böhlke (1), (2), (3) & (4); Krumholz (1); Cuba, Mead (1); Puerto Rico, Erdman; Smith, C. L.; Trindade Isl., Brazil, Pinto (1).

South Temperate.—South Africa, Jubb; Smith, J. L. B. (6), (11), (14), (15) & (16); Chile, Buen (3); Schultz (1); Queensland, Haysom; Munro (2); N.S. Wales, Schultz (2); Australia, Fowler (2); Marshall, T. C.; Munro (1); Scott, T. D.; Whitley (2); New Zealand, Garrick; Parrott.

Antarctic.—Abe (3).

c. FRESHWATER

General.—Biogeography of African lakes, Blanc; hydrobiology of L. Tanganyika, Poll (2); effect of water diversions on distribution of British Columbia fishes, Lindsey; distributional patterns of Texas fishes, Hubbs, C. (1); pleistocene glaciation and distribution of Minnesota Cyprinoids, Underhill.

Palaeartic.—Finland, Pynnönen; Shetland, Swan (2); Yorkshire, Hazelwood; Camargue, France, Lévêque; Holland, Bommel; Austria, Bauer & Schubert; Rumania, Balon (2); Nalbant (1) & (2); Czechoslovakia, Oliva (1); Liguria, Italy, Arbocco; Portugal, Albuquerque; Iran, Kozhin; Israel, Steinitz & Ben-Tuvia; Pechora river, Russia, Kurilov; Sari-Su basin, Russia, Ershchenko; Gruzia, Demetrashvili; Elanidge (1) & (2); East Asia, Boeseman

(1); North China, Mori, T.; Japan, Hamada; Okada & Kubota (2); Oshima (2) & (3).

Oriental.—Ceylon, Meinken (2); Johore and Java, Raut; Thailand, Benl (1) & (2); Klausewitz (8), (9) & (10); Sunda Sea, Thienemann.

Ethiopian.—French Guinea, Lambert; Belgian Congo, Boeseman (2); Poll (1); Uganda, Greenwood (4); Lake Victoria, Greenwood (1); Lake Nyasa, Fryer; East Africa, Klausewitz (11).

Nearctic.—Labrador, Backus (1); British Columbia, Lindsey; Saskatchewan, Scott, W. B.; Washington, Fitzgerald; Dakota, Robins & Raney (1); Iowa, Carlander; Cleary; Texas, Hubbs, C. (2) & (4); Hubbs & Brown; Hubbs & Springer; Robins & Raney (2); Louisiana, Suttks (2); Lower Mississippi drainage, Hemphill; Alabama, Cooper & Hemphill; Florida, Kilby & Caldwell.

Central America.—Mexico, Hubbs & Springer; Miller, R. R. (2); New Mexico, Koster.

South America.—British Guiana, Meinken (1); Surinam, Hoedeman (4); Brazil, Hoedeman (2); Ribeiro (1) & (2); Argentina, Aramburu (3).

Australian region and Polynesia.—Good; Whitley (1).

d. FOSSIL

General.—Origin of Vertebrates, Berrill; Lehman (3); origin of first tetrapods, Jarvik; habitat of early vertebrates, Robertson, J. D.; palaeoecology of Agnatha, Robertson, G. M. (1); bibliography of palaeoecology of Agnatha, Robertson, G. M. (2); bibliography of palaeoecology of fishes, David; evolution of Dipnoi, Lehman (1); palaeogeographic importance of Dipnoi, Pidoplichko & Kurazhkovski; evolution of actinopterygians, Saint-Seine; evolution of teeth, Buistrov; fish in carbonate concretions, Weeks; guide fossils (Chordata) of USSR Devonian, Obruchev (1); paired pineal organs, Edinger; determination, Chavan & Cailleux; fossilization, Breder.

Palaeozoic.—Ordovician, Ross; Devonian, Tarlo; Balabai (2); Balabai & Opalatenko; Bystrow; Chi; Fahlbusch; Gross; Kulczycki; Obruchev (1); Orvig (1), (2) & (3); Smith, I. C.; Carboni-

ferous, Baird; Dorr; Heide; Khabakov (1) & (2); Miller, H. W.; Miller & Swineford; Peyer; Permian, Hoehne; Konta.

Mesozoic.—Trias, Beltan; Triassic, Guffroy; Lehman (2); Nielsen; Rutte; Jurassic, Khabakov (2); Lapparent; Liu & Yeh; Orvig (2); Peyer; Weiler (3); Cretaceous, Avnimelech; Ghlikman (1) & (2); Liu, T. S.; Santos; Siegfried; Springer, V. G.

Tertiary.—Eocene, Stinton (1); Oligocene, Danil'chenko; Ghorbach; Smigreska; Walters (1); Weiler (1) & (2); Miocene, Henriques da Silva; Kruckow; Kudrin; Liu (2); Stinton (2); Svichenskaya; Vokes; Pliocene, Liu (1); Papp & Thenius; Sarma; Yakovlev.

Quaternary.—Munthe; Pleistocene, Huang; Holocene, Greenwood (2) & (3).

III.—SYSTEMATIC INDEX

GENERAL

Classification.—Evolutionary aspects of, Marshall, N. B. (1); Review of Berg's classification, Obruchev (2); utilization of X-rays, Miller, R. R. (3).

Nomenclature.—Status of *Bagre* Cuvier (Oken), *Bagrus* Val. and *Porcus* Geoffroy St. Hilaire, Jayaram; addition of *Cubiceps* Lowe 1843 to the Official List of Generic Names, Opinion 461; designation of type species for *Heterandria*, Opinion 375; *Neoceratodus* valid in Dipnoi, Miller, R. R. (1); validation of *Osmerus*, Hemming; Direction 69; additions to Official List of Generic Names, Directions 33-34; correction of entries in Official List of Generic Names, Direction 56; additions to the Official List of Specific Names, Direction 57; determination of gender, Direction 30; Opinions 438, 485 & 487.

Faunistic works.—Fishes of Portuguese waters, with keys, Albuquerque; keys to German freshwater fishes, Döderlein; freshwater fishes of New Mexico, Koster; fishes of Uganda, Greenwood (4); Freshwater fishes of Australia, Whitley (1); New Zealand marine fishes, Parrott; fishes of China, with keys, Fowler (1); Keys to economic fishes of U.S.S.R., Borisov & Ovsyannikov; Ostracoderms and fishes of the Devonian in USSR, Obruchev (1).

MARSIPOBRANCHII

Phylogeny, Balabai (1).

Bibliography of palaeoecology, Robertson, G. M. (1) & (2).

†EUPHANERIDA

Jamoytius and origin of vertebrates, Berrill.

†HETEROSTRACI

New psammosteids from Emsian of C. Poland, Tarlo.

Astraspis desiderata and *Eriptychiurus americanus* figd. from Ordovician E. Montana, Ross.

Ganosteus stellatus figd., Obruchev (1).

Psammolepis paradoxa figd., Obruchev (1).

Psammosteus marginalis, *P. maeandrinus* figd., Obruchev (1).

Pteraspis dunensis descr. and figd., Fahlbusch; *P. lerichei*, *P. major*, *P. elongata* figd. and range in Podolian Old Red Sandstone discussed, Balabai (2).

Pycnosteus palaeiformis, *P. tuberculatus* figd., Obruchev (1).

Rhinopteraspis Jaekel 1919 validated, type *Archaeoteuthis dunensis* Roemer 1855, and *Palaeoteuthis* Roemer 1855 and *Archaeoteuthis* Roemer 1855 suppressed, Opinion 438.

Schizosteus striatus figd., Obruchev (1).

†THELODONTI

Scales figd. from West Spitsbergen, Ørvig (3).

†OSTEOSTRACI

Alaspis gen. nov. type *A. macro-tuberculata* sp. nov. U. Devonian Escuminac Bay, Canada, Ørvig (1) p. 372 fig. 1D.

Benneviaspis holtedahli, endoskeletal hard tissues figd., Ørvig (3).

Escuminaspis gen. nov. type *Cephalaspis laticeps* Traquair, Ørvig (1) p. 372 fig. 1C.

†ANASPIDA

Pharyngolepis kiaeri sp. nov. Devonian Norway p. 380 text-figs. 2-4, 8, 10 pls. iv, v; *P. oblongus* figd., Smith, I. C.

CYCLOSTOMATA

PETROMYZONIDAE

Of Australia, Whitley (1).

Distribution of Eurasian forms, Lanzing.

List of natural hybrids, Slstenenko.

Development of intestinal blood system and vascular couples, Baxter.

Lampetra experiments on neural crest, Newth; Mauthner neurones of larvae, Whiting; *L. aepyptera* recorded from Alabama, Cooper & Hemphill; *L. fluviatilis* of the Baltic, Abakumov; structure of gills, Morris, R.; *L. japonica* bionomics and systematics, Morozova, T. A.; ecological notes, Nikolski (2); *L. japonica kessleri* notes on spawning, Semenov-Tyan-Shanski; *L. planeri* osmotic conditions in egg and early stages, Hardisty; origin of acoustico-facialis complex, Fisk; *L. zanandreae*, sexual maturity in larvae, Zanandrea.

Petromyzon marinus laboratory care and feeding of larvae, Sawyer; 'spike' potentials produced in head region, Kleerekoper & Sibakin.

MYXINIDAE

Eptatretus burgeri, *E. okinoseanus* chromosome study, Nogusa.

Myxine glutinosa occurrence in Mediterranean, Dieuzeide.

†PLACODERMI

ACANTHODII

Teeth and spines of *Gomphodus* and *Nostolepis* descr. and figd., Gross.

Acanthodes cf. *bronni* scales figd., Hoehne; *A. lopatini* figd., Khabakov (1).

Atopacanthus jaws descr. and figd., Ørvig (3).

Onchus marginalis, *O. concinnus* figd., Obruchev (1).

ARTHRODIRA

Microstructure of dermal bone, Bystrow.

Paired pineal organs, Edinger.

Actinolepis? sp. skull-roof figd., Ørvig (3); *A. tuberculata*, *Plourdosteus livonicus*, *Phlyctaenaspis acadica* microstructure of tubercles, Gross.

Anomalichthys ingens figd. from U. Devonian Poland, **Kulczycki**.

Chelyophorus pskovensis sp. nov. Devonian Russia p. 201 pl. liii fig. 4; *C. verneuili* figd., **Obruchev** (1).

Coccosteus livonicus, minor, mironovi, trautscholdi figd., **Obruchev** (1).

Deveonema gen. nov. type *D. obrucevi* sp. nov. U. Devonian Poland, **Kulczycki** p. 331.

Dinichthys denisoni p. 313 text-fig. 10 pl. vi fig. 4; vii; *D. ceterus* p. 314 pl. viii fig. 1, spp. nov. U. Devonian Poland; *D. pustulosus*, *D. cf. tuberculatus* figd., **Kulczycki**.

Dunkleosteus endoskeletal tissues descr. and figd., **Ørvig** (3).

Ellopetalichthys gen. nov. type *Macroptetalichthys scheii* Kiaer **Ørvig** (3) p. 300 text-figs. 5F, 7A pl. i.

Heterostius sp. figd., **Obruchev** (1).

Holonema radiatum figd., **Obruchev** (1); figd. from U. Devonian Poland, **Kulczycki**.

Homostius sp. figd., **Obruchev** (1).

Luetteichthys gen. nov. type *L. borealis* sp. nov. M. Devonian North Land USSR, **Bystrow** p. 250 figs. 9-14.

Lunaspis sp. figd. from U.S.S.R., **Obruchev** (1).

Malerosteus gen. nov. type *M. gorizdroae* sp. nov. U. Devonian Poland, **Kulczycki** p. 291 text-figs. 3-6, pl. i, figs. 4-7; ii; iii figs. 1-3.

Operchallosteus gen. nov. type *O. vialowi* sp. nov. U. Devonian Poland, **Kulczycki** p. 335 pl. xii fig. 3.

Pachyosteus bulla figd. from U. Devonian Poland, **Kulczycki**.

Palaeomylus and *Ptyctodus* microstructure of tooth-plates descr. and figd., **Ørvig** (3).

Phyllolepis sp. figd., **Obruchev** (1).

Ptyctodus sp. figd., **Obruchev** (1).

Rhynchodus and *Ptyctodus* microstructure of jaws, **Gross**.

Sedowichthys gen. nov. type *S. terrae-boreae* sp. nov. M. Devonian North Land USSR, **Bystrow** p. 240 figs. 1-8.

Titanichthys kozlowskii sp. nov. U. Devonian Poland, **Kulczycki**.

Tollichthys gen. nov. type *T. polaris* sp. nov. M. Devonian North Land U.S.S.R., **Bystrow** p. 257 figs. 15-19.

Tomaosteus gen. nov. type *T. grossi* sp. nov. U. Devonian Poland, **Kulczycki** p. 298 text-fig. 7 pl. iii figs. 4, 5.

ANTIARCHA

Asterolepis ornata, radiata figd., **Obruchev** (1).

Bothriolepis-beds in Yunnan, age, **Chi**; *B. ornata*, maxima, cellulosa panderi figd., **Obruchev** (1).

SELACHII

Presence of a paraphysis, **Kappers**.

? Egg capsules, *Palaeoxyris tamica* sp. nov. Carboniferous Donetz Basin p. 86 pl. ix fig. 8; *Crookallia czernyshevi* figd., Jurassic Crimea, **Khabakov** (2).

†ICHTHYODORULITES

Alienacanthus gen. nov. type *A. malkowskii* sp. nov. U. Devonian Poland, **Kulczycki** p. 357 pl. xiii fig. 1.

Eczematolepis, *Gamphocanthus*, *Oestophorus* systematic position discussed, **Ørvig** (3).

Sentacanthus gen. nov. type *S. zeli-chowskiae* sp. nov. U. Devonian Poland, **Kulczycki** p. 356 pl. xiii fig. 3.

†ICHTHYOTOMI

Pleuracanthus cf. arcuatus figd. from Pennsylvanian Michigan, **Dorr**.

EUSELACHII

Inc. sed.

†*Dicrenodus okensis* teeth figd., **Khabakov** (1).

Significance of fin-spines, **Peyer**.

Morphology of hypophysis, **Honma** (2).

†CTENACANTHIDAE

Ctenacanthus varians var. *russakovi* spine figd., **Khabakov** (1).

Nemacanthus monilifer, *Ctenacanthus heterogyrus*, *C. brevis* fin-spines figured, **Peyer**.

PLEUROTREMATA

HEXANCHIDAE

Hexanchus griseus from western North Atlantic; stomach contents, **Backus** (2).

ODONTASPIDAE

Odontaspis †cuspidata teeth figd., Miocene Maryland, **Vokes**.

†*Pseudoisurus* gen. nov. type *P. tomosus* sp. nov. U. Cretaceous ? Russia, **Ghlikman** (2) p. 116 pl. i figs. 16-20.

LAMNIDAE

Relationship to Odontaspidae, **Ghlikman** (2).

Carcharodon carcharias juvenile female taken in Cape Cod Bay, **Backus** (2).

Cetorhinus maximus southern extension of range, **Wood**, F. G.; notes on juvenile female, **Backus** (2).

Isurus key to species, **Smith**, J. L. B. (11); *I. †denticulatus* sp. nov. Cenomanian, U.S.S.R., **Ghlikman** (1) p. 103 figs. 1-17; *I. oxyrinchus* measurements of an adult, **Krumholz** (2); *I. tigris africanus* subsp. nov. South Africa, **Smith**, J. L. B. (11) p. 96.

†*Otodus obliquus* teeth figd. Miocene Maryland, **Vokes**.

Oxyrhina †desori tooth figd. Miocene Maryland, **Vokes**.

†*Paraísurus* gen. nov., type *Oxyrhina macrorhiza* Pietet and Campiche, **Ghlikman** (2) p. 116 pl. i figs. 14, 15.

†ORTHACODIDAE fam. nov.

Euchlaodus gen. nov. type *Oxyrhina lundgreni* Davis, **Ghlikman** (2) p. 116 pl. I f. 16.

Paraorthacodus gen. nov., type *Synechodus recurvus* Traut., **Ghlikman** (2) p. 115 pl. i figs. 6-13.

RHINCODONTIDAE

Rhincodon typus external morphology of embryo, **Reid** (1).

SCYLORHINIDAE

Scylorhinus caniculus feeding on the nudibranch, *Tritonia*, **Stephen**, **Rae** & **Wilson**; *S. stellaris* comparison of lampbrush chromosomes with those in *Sepia* and *Anilocra*, **Callan**.

CARCHARHINIDAE

Aprionodon isodon from Puerto Rico, **Erdman**.

Carcharhinus acronotus from Puerto Rico, **Erdman**; *C. albimarginatus* recorded from Mozambique, **Smith**, J. L. B. (5).

Eulamia falciformis stomach contents and colour notes, **Backus** (2).

Galeocerdo †aduncus tooth figd. Miocene Maryland, **Vokes**.

Hemipristis †serra figd. from Orissa, **Sarma**; teeth figd. Miocene Maryland, **Vokes**.

Hypoprion signatus recorded from Bahamas, **Krumholz** (1); from Gulf of Mexico, **Springer**, S. & **Thompson**; from New England, **Mather** & **Gibbs**.

Mustelus, included with *Scylliogaleus* as separate family, key to S. African spp. p. 357, *M. palumbes* sp. nov., S. Africa, pp. 357 and 358 text-fig. 1, E and F, **Smith**, J. L. B. (16); *M. canis* from Puerto Rico, **Erdman**.

Neotriakis sinuans gen. et sp. nov. S. Africa, **Smith**, J. L. B. (15) p. 262 figd.

Prionace glauca data on embryos, **Backus** (2).

Pterolamiops longimanus from Puerto Rico, **Erdman**.

Scoliodon terrae-novae taken in deep water, **Backus** (2).

Scylliogaleus made type genus of separate family with *Mustelus*, p. 353 *S. quecketti* descr. and figd., **Smith**, J. L. B. (16).

†EDESTIDAE

Physonemus cf. *acinaciformis* figd. from Pennsylvanian of W. Virginia, **Baird**.

†HYBODONTIDAE

Acrodus anningiae fin-spines figured, **Peyer**.

SQUALIDAE

Taxonomic review, with keys to genera and species, **Bigelow** & **Schroeder**.

Acanthorhinus carcharias description of uterus and foetus, **Koefoed**; reproduction, **Bjerkman**.

Etmopterus baxteri p. 172 figd., *E. abernethyi* p. 181 figd. spp. nov. New Zealand, **Garrick**; *E. bullisi* sp. nov. Florida, **Bigelow** & **Schroeder** p. 50 figd.

Euprotomicrus bispinatus female captured north of Midway Isl., Pacific, **Otsu** & **Yoshida**.

Squalus acanthias acanthias, *S. a. suckleyi*, a comparison, **Lindberg** & **Legeza**.

HYPOTREMATA

RAJIDAE

Raja batis correlation between muscles and skull, **Gottenbos**; *R. clavata*, function of ampullae of Lorenzini, **Murray**; *R. rhina* an abnormal example, **Barraclough**; *R. spinicauda* extension of range and description of young stages, **Kreff**.

DASYATIDAE

Dasyatis centroura from South Florida, **Phillips**; *D. favus*, *D. sephen* recorded from E. Africa, **Smith**, J. L. B. (6); *D. lubricus* sp. nov. Algoa Bay, **Smith**, J. L. B. (6) p. 429 figd.

MYLIOBATIDAE

Aetobatus narinari from Chesapeake Bay, **Massmann**.

Myliobatis †*pachyodon* tooth-plate figd. Miocene Maryland, **Vokes**.

†BRADYODONTI

Petalodus jewetti sp. nov. Pennsylvanian Kansas, **Miller**, H. W. p. 82 2 figs.

Psammodus rugosus teeth figd., **Khabakov** (1).

OSTEICHTHYES

Evolution of actinopterygians, **Saint-Seine**.

Sexual differentiation, **Ancona** (3).

PALAEOPTERYGII

†ARCHISTIA

PALAEONISCIDAE

Birgeria sp. figd. from Triassic S. Madagascar, **Guffroy**.

Boreosomus merlei (sic) brain-cast figd., **Beltan**.

Elonichthys aitkeni scales figd. from L. Carboniferous Egypt, **Heide**.

Rhadinichthys laevis, *R. canobiensis* scales figd. from L. Carboniferous Egypt, **Heide**.

Scanilepis dubia, *Orvikuina vardiansensis*, *Gyrolepis albertii* histology of scales, **Ørvig** (2).

Sunolepis gen. nov. type *S. yumenensis* sp. nov. Cretaceous, Western Karsu, China, **Liu**, T. S. p. 108 2 text-figs. pls. i-vi.

BOBASATRANIIDAE

Ecrinesomus dizoni and *Bobasatrania mahavavica* figd. and redeser., **Lehman** (2).

Lambeichthys gen. nov. type *Platysomus canadensis* Lambe, **Lehman** (2) p. 16.

CHONDROSTEI

Otol. (inc. sed.) *malmensis* sp. nov. Jurassic W. Germany p. 229 pl. iii figs. 1, 2; Otol. (inc. sed.) *altus*, *dorsolobatus*, *brandi*, *dorsoarcuatus* figd., **Weiler** (3).

†ERROLICHTHYIDAE

Errollichthys mirabilis descr. and figd., **Nielsen**.

ACIPENSERIDAE

List of natural hybrids, **Slastenenko**.

Development of perivitelline space in oocytes, **Sadov** (1).

Acipenser results of artificial propagation, **Manea & Mihai**; breeding migrations in Roumanian Danube, **Leonte**; *A. fulvescens* spawning periodicity, **Roussow**; *A. medirostris* taken at Point Vicente, S. California, **Norris**; *A. stellatus* lipids in oocytes and eggs, **Ginzburg**; effect of different temperatures on hatching gland, **Ignatyeva** (2); *A. stellatus*, *A. guldenstaedti* deformation of pectoral fin, **Huzum**.

Huso huso hatching gland, **Ignatyeva** (1).

NEOPTERYGII

PROTOSPONDYLI

†SEMIONOTIDAE

Lepidotes sp. rec. Bathonian Morocco, **Lapparent**.

Semionotus bergeri figd., **Rutte**; *S. canisensis* figd. from Basutoland, **Guffroy**.

AMIIDAE

Amia calva gonad differentiation, **Ancona** (2).

ISOSPONDYLI

Respiratory importance of pigment in eggs, **Soin**.

†LEPTOLEPIDAE

Otol. (*Leptolepidarum*) *modestus*, aff. *simplex*, *aldorfensis*, *malloides martini*, *probabilis*, *obliquus*, *similis* figd., **Weiler** (3).

ELOPIDAE

Elops hawaiiensis post larvae descr. and figd. from Luzon, **Blanco & Villadolid**.

†*Laminospondylus* gen. nov. type *L. transversus* sp. nov. U. Cretaceous Texas, **Springer**, V. G. p. 135, 1 pl. 1 text-fig.

Otol. (*Elopoidarum*?) *postconvexus*, *ellipticus* figd., **Weiler** (3).

ALBULIDAE

Albula vulpes third Texas record, **Leary** (2).

Pterothrissus †*umbonatus* otoliths figd. from London Clay of **Bognor, Stinton** (7).

Otol. (*Pterothrissidarum*) cf. *galtinus* figd., **Weiler** (3).

ALEPOCEPHALIDAE

Alepocephalus rostratus from Algerian coast, **Dieuzeide & Roland** (2).

Xenodermichthys copei from Icelandic waters, **Kotthaus & Krefft**.

SEARSIDAE

Holtbyrnia macrops sp. nov. Madeira, **Maul** p. 11 figd.

Searsia schnakenbecki first E. Greenland record, **Kotthaus & Krefft**.

CLUPEIDAE

List of natural hybrids, **Slastenenko**.

Baltic herring, development in late Quaternary times, **Munthe**.

Genealogy of gill-helix, **Takahasi**.

Alosa alosa, *A. fallax killarniensis* Irish records, **Gibson** (1); *A. kessleri kessleri*, *A. k. volgensis* development of larvae, **Braginskaya**; *A. pseudoharengus* distribution in Great Lakes, **Miller**, R. R. (4); *A. sapidissima* recaptures of tagged specimens, **Vladykov** (1); pre-nuptial behaviour, **Medcof**.

Brevoortia patronus bionomics, description of larvae and young, **Suttkus** (3).

Caspialosa pontica reproduction in the Danube, **Teodorescu-Leonte & others**.

Clupea fishery of, **Hodgson**; *C. harengus* age composition of Manx population, **Bowers** (1), (2), (3); southern

North Sea populations, **Cushing & Burd**; research on Atlantic populations, **Leim & others**; spawning places, **Yudanov**; development of pronephros, **Holstvoogd**; *C. harengus membras* development in water of high salinity, **Krizhanovski** (1); *C. pallasii* structure and activity of spermatozoa, **Yanagimachi** (2); entrance of sperm into egg, **Yanagimachi** (3); use of Ringer's solution in experimental work on fertilization and development of eggs, **Yanagimachi** (1); *C. †sardinites* figd. from Oligocene Hesse, **Weiler** (1); *C. †trolli* sp. nov. otoliths Pannonian Vienna Basin, **Papp & Thenius** p. 34 pl. vi figs. 45, 46.

Clupeonella delicatula caspia behaviour in captivity, **Nikonorov**.

Dastilbe †*moraesi* sp. nov. Cretaceous Brazil, **Santos** p. 19 pls. i, ii.

Dorosoma cepedianum distribution in Great Lakes, **Miller**, R. R. (4).

Engraulis japonica vertebral counts on post-larvae correlated with growth, **Hayashi & Suzuki**.

Fluviatosa erebi figd., **Whitley** (2).

Gadusia chapra pharyngeal pockets, **Kapoor**, B. G. (3).

Opisthonema oglinum aggregation in rough water, **Springer**, S. (2).

Sardina pilchardus population study, **Cruz** (1); distribution and number of in Channel, **Cushing** (2); growth in Yugoslav waters, **Muzinic**; distribution of eggs and larvae off Balearic Isl., **Massuti**; parasitized by *Peroderma*, **Dieuzeide & Roland** (4); parasitic castration, **Santos Pinto** (1); gonadal tumours, **Santos Pinto** (2); *S. pilchardus*, *Sardinella aurita* biometric study, **Dieuzeide & Roland** (3).

Sardinella aurita biometric study, **Monteiro**; *S. leiogaster* new Borneo record, **Inger**.

Sardinops ocellata bionomics, **Davies** (3); feeding habits, **Davies** (2); size composition of commercial catches, **Davies** (1).

CHANIDAE

Chanos chanos post larvae descr. and figd. from Luzon, **Blanco & Villadolid**; culture in Philippines, **Rabanal & others**.

PHRACTOLAEMIDAE

Phractolaemus ansorgii recorded from Stanley Pool, **Boeseman** (2).

SALMONIDAE

Natural hybrids, **Slastenenko**.

Reactions to light in different conditions, **Fields**.

Evolution and distribution of *Coregonus*, *Prosopium* and *Leucichthys*, **Smith, S. H.**

Coregonus of Lake Imandra, Russia, **Vladimirskaya (1)**; results of acclimatizing in Roumania, **Busnita & others (1)**; speciation and population studies, **Svårdson (1)**; *C. lavaretus*, *C. nasus* bionomics of Sundsvall Bay populations, **Lindroth (1)**; *C. lavaretus maraenoides* biological heterogeneity of introduced specimens, **Shirkova**; *C. lavaretus maraenoides* × *C. lavaretus* cross breeding and feeding habits of hybrids, **Gasowska**; *C. sardinella banniti* taxonomic position, **Anpilova**.

Oncorhynchus gorbuscha variation in size of year classes in relation to spawning migration, **Birman (1)**; *O. keta* development in Amur river, **Disler**; a Janus monstrosity, **Honma (4)**; population studies in Amur basin, **Birman (2)**; *O. masu* ecological notes, **Semko**; *O. masu* morpho *formosanus* a non-migratory form in Sedanka river, **Moiseev (2)**; *O. masou*, *O. rhodurus* distribution in rivers of Kiushiu, Japan, **Oshima (4)**; *O. nerka* distribution in two British Columbia lakes, **Johnson, W. E.**; population study, **Vernon**; fluctuations of stock in Kamchatka waters, **Krogius & Krokhiin**; *O. tshawytscha* feeding habits, **Merkel**; survival of mature male parr after spawning, **Robertson, O. H.**

Salmo structure and morphogenesis of dorsal fin, **François**; *S. clarkii*, inter-racial hybrids, **Donaldson et al**; permanence and size of home territory, **Miller, R. B. (1)**; *S. clarkii*, *S. gairdneri* scale characteristics of yearlings compared, **Vernon & McMynn**; *S. gairdneri* alterations in blood constituents following muscular activity, **Black (1)**; growth, **Larkin, Terpenning & Parker**; *S. irideus* liver regeneration, **Faktorovich (1)**; *S. letnica*, **Sapkariev (1)**; variation in fat content, **Sapkariev (2)**; *S. salar* age, growth and movements of Foyle river specimens, **Went & Vickers**; causes of fluctuations of Baltic stocks, **Lindroth (2)**; migrations, **Azbelev & Lagunov**; differential characters of populations of tributaries of the same

river-system, age and season of smolt migrations, **Went (5)**; from the Mersey, **Anon. (1)**; investigation on 'late running' specimens in Taw and Torridge estuaries, **Cameron**; large Irish examples, 'Avondhu'; movements around Ireland, **Toner**; **Went (1)**; results of tagging in Labrador, **Blair (1) & (2)**; movements off N.E. coast of England, **Hartley & Brayshaw**; disappearance from the Elbe, **Bauch**; *S. trutta*, *S. salar*, comparison of growth rates in Cashla river, **Went (2)**; *S. trutta* growth rate before and after raising of lake level, **Frost (1)**; of Lough Rea, Co. Galway, **Healy (3)**; growth rate of in Fergus river system, Co. Clare, **Healy (4)**; age and growth of Ilan river examples, **Went (6)**; age and growth of Loch Kernsary specimens, **Swan (1)**; feeding habits in a Swedish stream, **Nilsson**; migration, age and growth in Lake Rensjön, **Runnström**; notes on wounded specimens, **Smith, I. W.**; of R. Baracca, Liguria, **Arbocco**; organogeny, **Bernard**; retinal growth, **Lyall (1)**; *S. trutta*, *Salvelinus alpinus*, bionomics of in Murmansk region, **Vladimirskaya (2)**.

Salvelinus, spawning in Llyn Bodlyn, N. Wales, in November, **Jones, R. W.**; forms occurring in southern Saghalien, **Ishida**; *S. alpinus* notes on Icelandic examples, **Stewart**; osmoregulation, **Gordon, M. S.**; *S. colii* Lough Corrib specimens, **Went & Twomey**; *S. gracillimus* from Shetland, **Swan (2)**; *S. marstoni* local forms, **Vladykov (2)**; *S. namaycush* changes in blood levels of lactic acid following muscular activity, **Black (2)**.

Thymallus bionomics of in Murmansk lakes, **Vladimirskaya (3)**; *T. arcticus baicalensis brevipinnis* reproduction, **Tugarina**.

MICROSTOMIDAE

Bathylagus benedicti description of retina, **Vilter**.

Microstoma microstoma recorded from Gulf of Mexico, **Grey**; *M. pacificus* a tagged example recaptured after six years, **Best (2)**.

OSMERIDAE

Hypomesus sakhalinus sp. nov. **L. Taraika**, Sakhalin, **Hamada** p. 137 figd.

Spirinchus dilatus new Californian record, **Jensen**.

SALANGIDAE

Salangichthys microdon ecological observations during breeding season, **Okada & Mori**.

GONOSTOMATIDAE

Cyclothone braueri from E. Greenland waters, **Kotthaus & Krefft**; *C. microdon* Japanese examples discussed, **Tomiyama & Abe**.

Valenciennellus tripunctulatus from Gulf of Mexico, **Grey**.

STERNOPTYCHIDAE

Argyropelecus gigas from Gulf of Mexico, **Grey**; *A. hemigymnus* from Greenland, **Kotthaus & Krefft**.

OSTEOGLOSSIDAE

Arapaima gigas bionomics, **Mig-dalski**.

Osteoglossum bicirrhosum, behaviour in aquarium, **Heck**.

Scleropages, abundance and size in Malaya, fig., **Locke**.

NOTOPTERIDAE

Notopterus sp., photograph, **Scott, J. S.**

MORMYRIDAE

Control of electric discharge by 'paraseptal nucleus,' **Szabo (1)**.

HAPLOMI

ESOCIDAE

Natural hybrids, **Slastenenko**.

Esox lucius systematic and biological notes, **Čihār**; specimen lacking pelvic fins, **Herbst**; introduction into Irish waters, **Went (3)**; growth rate in Lough Rea, Galway, **Healy (2)**; age and growth of Irish specimens, **Austin**; developmental stages, **Shamardina**; effect of external factors on development, **Tschörtner**; food of young, **Makkoveeva**; *E. masquinongy* growth, mortality and movements of a population, **Crossman**.

UMBRIDAE

Novumbra hubbsi extension of range, **Fitzgerald**.

INIOMI

Larval and juvenile forms from the Mediterranean, **Padoa & others**.

SUDIDAE

Key to genera and species, **Kamohara (1)**.

Bathypterois dubius from Algerian coast, **Dieuzeide & Roland (2)**.

Bathytrophops gen. nov. type *Bathymicrops sewelli* Norman, **Nybelin** p. 258.

Chlorophthalmus borealis sp. nov. Chosi, Japan, **Kuronuma & Yamaguchi** p. 272.

MYCTOPHIDAE

Ontogenetic differences in Mediterranean forms, **Padoa & others**.

Lampadena nitida structure of pre-caudal photophores, **Anadon**.

Lampanyctus leucopsarus age and growth, **Bolin**; *L. †serratus* sp. nov. otoliths Miocene New Zealand, **Stinton (2)** p. 514 pl. xxxii figs. 1-4.

Myctophum nitidulum, a distinct species, **Gibbs (2)**; *M. (Myctophum) punctatum* from Greenland waters, **Kotthaus & Krefft**.

"*Scopelus*" †*ovatus* sp. nov. otoliths Miocene New Zealand, **Stinton (2)** p. 514 pl. xxxii figs. 10, 11.

ANOPTERIDAE

Anopterus pharao from Kiska Isl., Aleutians, **Welander, Alverson & Bergman**.

PARALEPIDIDAE

Paralepis key to postlarvae of Mediterranean species, **Padoa & others**.

ATELEOPIIDAE

Ijimaia antillarum from Gulf of Mexico, **Kanazawa**.

OSTARIOPHYSI

CYPRINOIDEA

Parallel evolution in some Cyprinids and Catostomids, **Kafuku**.

CHARACIDAE

Natural hybrids, **Slastenenko**.

Anoptichthys presence of a gene for albinism, **Sadoğlu**; *A. hubbsi*, *Astyanax mexicanus* observations on behaviour, **John**; *A. jordani*, general account, **Lüling**; colour sensitivity, **Thines & Kähling**.

Cheirodon axelrodi Schultz and *Hyphessobrycon cardinalis* Myers & Weitzman, relative priority, **Opinion 485**.

Cyrtocharax squamosus, **Aramburu (1)**.

Hemigrammus armstrongi perhaps = *Cheirodon piaba*, **Ladiges**.

Hydrocyon vittatus, **Groenewald**.

Hyphessobrycon griemi sp. nov. Gojas, Brazil, **Hoedeman (2)** p. 87 figd.

Moenkhausia pittieri polycystic kidneys, **Stolk (2)**; *M. sanctae filomenae*, life-colours and description, **Meinken (3)**.

Moojenichthys myersi gen. et sp. nov. Brazil, **Ribeiro (1)** p. 546 figd.

Petersius caudalis, breeding in aquaria, **Poersch**.

Thayeria obliqua carcinoma of kidneys, **Stolk (5)**.

HEMIODONTIDAE

Nannostomus beckfordi aripirangensis method of fighting, **Wickler (3)**.

STERNARCHIDAE

Porotergus ellisi sp. nov. Parana river, Argentina, **Aramburu (3)** p. 154 figd.

GYMNOTIDAE

Parallelism with Mormyridae, **Atz & Coates**.

Structure of electric organs, **Szabo (2)**.

ELECTROPHORIDAE

Electrophorus electricus behaviour in captivity, **Boursot**.

CATOSTOMIDAE

Natural hybrids, **Slastenenko**.

Distribution in Minnesota, **Underhill**.

Carpiodes carpio carpio age and growth, **Buchholz**.

Minytrema melanops discussion of Chesapeake Bay record, **Robins & Raney (1)**.

Moxostoma (Scartomyzon) key to species of Texas and Mexico; relationships, **Robins & Raney (2)**; *M. austrinum milleri* subsp. nov. Mexico, **Robins & Raney (2)** p. 307 figd.; *M. carinatum* notes on southern range, **Robins & Raney (1)**; *M. valenciennesi* recorded from North Dakota, **Robins & Raney (1)**.

Pantosteus jordani recorded from Alberta waters, **Scott, W. B.**

Ptychostomus haydeni Girard a synonym of *Moxostoma aureolum*, **Robins & Raney (1)**.

CYPRINIDAE

Natural hybrids, **Slastenenko**.

Distribution in Minnesota, **Underhill**.

Adaptive significance of horn teeth during development, **Eremeeva**.

Abramis description of an unnamed form from Germany, **Miegel (2)**; *A. brama* larval development, **Dmitrieva (1)**; **Vasnetzov & others**; spawning and early development in Vistula lagoon, **Dziekonska**; population study in Vistula region, **Poczopko (2)**; introduction into Khristoforov reservoir, **Melnikov**; comparison of Danube and Dnieper river populations, **Pavlov**; *A. brama orientalis* effect on stock of heavy fishing, **Bervald**.

Aspius aspius growth and reproduction, **Troitzkii**; feeding habits, **Vasiliu & Nicolau (2)**.

Barbodes, type and definition, **Schultz (3)**; **Meinken (4)**.

Barbus Cuvier & Cloquet, notes on status, **Hoedeman (3)**; restriction of genus, **Schultz (3)**; **Meinken (4)**; *B. longiceps* × *Varicorhinus damascinus* description of hybrid, **Steinitz & Ben-Tuvia**; *B. schneemanni* sp. nov. E. Africa, **Klauswitz (11)** p. 279 fig.; *B. tetrazona* renal adenocarcinoma, **Stolk (7)**; *B. cf. yunnanensis*, *B. †brevicephalus*, *B. szechuanensis* figd. from L. Pliocene Choukoutien, **Liu (1)**.

Bivbia tama sp. nov. Tama river, Japan, **Oshima (3)** p. 16 figd.

Blicca bjoerkna influence of light on feeding, **Dudek**.

Caecobarbus geertsii, general account, **Lüling**.

Capoeta, type and definition, **Schultz (3)**.

Capoetobrama kuschakewitschi bio-nomics, **Maxunov**.

Carassius ecology and taxonomy of two species, **Dmitrieva (2)**; *C. auratus* ecology of during introduction into Veselovsk reservoir, **Shchetinina**; coiling of intestine during development, **Yoshizaki**.

Chondrostoma nasus ohridanus development, **Točko**.

Chrosomus eos recorded from Saskatchewan, **Scott, W. B.**; *C. erythrogaster erythrogaster* recorded from Lower Mississippi drainage, **Hemphill**.

Cirrhitina mrigala, age-determination, **Jhingram**.

Cyprinella status of subgenus, with key to species, **Gibbs (1)**.

Cyprinus morphological changes in specimens acclimatised in Lake Balhash, **Burmakin**; oxygen consumption of fry, **Syazuki & Hayama**; *C. carpio* different forms of scales, **Dürr**; growth of mirror and leather carp, **Mengel & Steffens**; some unusual swimbladders, **Schreiter**; temperature selection, **Pitt & others**; results of artificial hybridization, **Lieder**; changes in pituitary during maturation of gonads, **Irkimovich & Zelenin**; larval development, **Vasnetzov & others**; vascular system of liver, **Friedrich**; structure of glands associated with digestive system, **Santa & Polingher**; main, accessory and emergency sources of food, **Vaas**; *C. carpio*, *Mylopharyngodon piceus*, *Ctenopharyngodon idellus* rec. from Pleistocene Honan, **Huang**; *C. †maomingensis* sp. nov. Miocene Kwantung China, **Liu (2)** p. 151 2 figs.

Dionda diaboli sp. nov. Texas, **Hubbs & Brown** p. 69 figd.

Eustira Gunther a synonym of *Danio* Hamilton, *E. ceylonensis* a synonym of *D. malabaricus*, **Silas**.

Gobio gobio, *G. uranoscopus*, *G. kessleri* notes on Roumanian specimens, **Nalbant (1)**.

Hybognathus hankinsoni recorded from Saskatchewan, **Scott, W. B.**

Hypophthalmichthys molitrix structure and function of suprabranchial, **Zambriborshch**; structure of gill apparatus, **Verigin**.

Labeo altivelis spawning grounds in Katanga Province, **Bont & Maes**; *L. bicolor* colour variation, **Klausewitz (8)**.

Leucaspis delineatus development and growth of scales, **Balon (1)**; from Lake Neuchatel, Switzerland, **Quartier**.

Leuciscus presbyter C. et V. a synonym of *Barbus (Puntius) amphibiis* (C. et V.), **Guibé & Spillmann**; *L. rutilus*

gastric epithelium, **Bernard**; *L. waleckii suiyuani* subsp. nov. Pao-Tou, N. China, **Mori, T.** p. 183 figd. See also *Squalius*.

Matsya †hsichihii sp. nov. Lower Pliocene, Choukoutien, China, **Liu (1)** pp. 7, 19 text-figs. 4, 5 pl. iii.

Notropis ortenburgeri, *N. maculatus*, *N. blennius* added to E. Texas fauna, **Hubbs, C. & Kemp**; *N. rubellus* spawning behaviour, **Reed (1)**; feeding habits and growth rate, **Reed (2)**; *N. venustus* redescribed and subspecies characterized, **Gibbs (3)**.

Osteochilus hasseltii (C. et V.) a synonym of *O. vittatus* (C. et V.), **Guibé & Spillmann**; main, accessory and emergency sources of food, **Vaas**.

Pfritte neogaea recorded from Saskatchewan, **Scott, W. B.**

Pungtungia shiraii sp. nov. Tama river, Japan, **Oshima (3)** p. 15 figd.

Puntius, type and definition, **Schultz (3)**; **Meinken (4)**; *P. javanicus*, main, accessory and emergency sources of food, **Vaas**; *P. roloffi* sp. nov. Thailand, **Klausewitz (9)** p. 193 figd., **Klausewitz (2)**.

Rasbora nigromarginata sp. nov. Ceylon, **Meinken (2)** p. 66 figd.

Rhodeus amarus spawning behaviour, **Wiepkema**.

Rutilus frisii development, **Smirnova, E. N. (2)**; *R. pigus virgo* biometric study and sexual dimorphism, **Misik**; *R. rutilus* development and growth of scales, **Balon (1)**; development of Aral Sea examples, **Gosteeva**; *R. rutilus caspicus* behaviour on feeding grounds, **Novikova**; larval development, **Vasnetzov & others**; *R. rutilus heckeli* larval development, **Dmitrieva (1)**; **Vasnetzov & others**; *R. rutilus lacustris* histology of muscles, **Lobintzev**; *R. rutilus* × *Chalcalburnus chalcoides*, **Nalbandoglu**. See also *Leuciscus*.

Scardinius erythrophthalmus growth rate in Lough Rea, Galway, **Healy (2)**; *S. erythrophthalmus* †*brevicaudus* subsp. nov. U. Tertiary Siberia, **Yakovlev** p. 63.

Schizothorax argentatus bionomics, **Savina**.

Squalius leuciscus distribution, bionomics in Luxemburg, **Hoffmann**.

Tinca tinca from Lough Lein, Kilarney, **Healy (1)**; results obtained from an electro-cardiogram, **Serfaty & Raynaud**.

Toxabramis paiyantiensis sp. nov. Paoting, N. China, **Mori**, T. p. 182 figd.

Tribolodon hakuensis feeding habits, **Imamura & Hashitani**.

Vimba vimba natio carinata feeding habits, **Vasiliu & Costea**; enzymes of the hatching glands, **Baburina & Buznikov**; peculiarities in development, **Smirnova**, E. N. (1).

COBITIDAE

Natural hybrids, **Slattenenko**.

Acanthopthalmus critical review, **Moldenhauer**; *A. cuneovirgatus* p. 30 figd. Johore, Singapore, *A. robiginosus* p. 31 figd., Java spp. nov., **Raut**.

Botia horae, *B. modesta*, *B. lecontei* **Klausewitz (1)**, (4), (8); *B. lohachata*, **Klausewitz (5)**; behaviour in aquarium, **Bader**.

Cobitis aurata vallachica subsp. nov. Rumania, **Nalbant (2)** p. 209 figd.; *C. elongata* relationships, **Banarescu & Nalbant**; *C. taenia* embryology, **Kokhanova**; *C. taenia*, *C. aurata* notes on Rumanian specimens, **Nalbant (1)**.

Noemacheilus phuketensis sp. nov. Thailand, **Klausewitz (9)** p. 195 figd.

SILUROIDEA

ARIIDAE

Galeichthys felis reproduction and early development, **Ward**.

DORADIDAE

Auchenipterus nuchalis, **Aramburu (4)**.

PLOTOSIDAE

Copidoglanis ater recorded from Queensland, **Marshall**, T. C.

SILURIDAE

Remains from Wadi Hoff, Egypt, **Moustafa**.

Centromochlus creutzbergi recorded from Surinam, **Hoedeman (4)**.

Wallagonia attu spawning habits and early development **Mazumdar**; sensory canals of head, **Kapoor**, A. S.

Wallago attu a teratological example, **Sarkar & Kapoor**.

BAGRIDAE

Status of *Bagre*, *Bagrus* and *Porcus*, **Jayaram**.

Coreobagrus generic description emended, **Okada & Kubota (2)**; *C. ichikawai* sp. nov. Miya river, Mie Prefecture, Japan, **Okada & Kubota (2)** p. 144 figd.

Mystus tengara teratological examples, **Sarkar & Kapoor**.

Pseudobagrus aurantiacus pit organ system, **Satō**.

Rita rita structure of barbels, **Bhatti (1)**; cutaneous sense organs, **Bhatti (2)**.

AMEIURIDAE

Natural hybrids, **Slattenenko**.

Distribution in Minnesota, **Underhill**.

Ameiurus nebulosus food, **Frank**; number of eggs produced, **Sedlár**.

Ictalurus melas occurrence of blind specimens, **Mayhew (2)**; *I. punctatus* growth, **Harrison**.

Schilbeodes mirurus infestation by parasite *Clinostomium*, **Schwartz**.

SCHILBEIDAE

Eutropius debauwi recorded from Stanley Pool, **Boeseman (2)**.

CLARIIDAE

Clarias palaeolithic remains from Mumba Cave, E. Africa, **Greenwood (2)**; *C. batrachus* induced spawning, **Ramaswami & Sundararaj (2)**.

Gymnallabes tihoni redescribed, **Poll (3)**.

Heterobranchius longifilis, in R. Kilombero, Tanganyika Territory, **Ford**.

Heteropneustes fossilis induced spawning, **Ramaswami & Sundararaj (1)**.

MOCHOCIDAE

Microsynodontis batesii recorded from Stanley Pool, **Boeseman (2)**.

Synodontis membranaceus consideration of bony rays in adipose fin, **Sandon**; *S. soloni* recorded from Stanley Pool, **Boeseman (2)**; *S. werneri* sp. nov. Stanley Pool, Belgian Congo, **Boeseman (2)** p. 146 figd.

MALAPTERURIDAE

Malapterurus electricus fibromas of skin, **Stolk (5)**.

PYGIDIIDAE

Eremophilus camposi sp. nov. rio Juquia, Brazil, **Ribeiro** (2) p. 72 figd.

CALLICHTHYIDAE

Cascadura Ellis based on juvenile example of *Hoplosternum thoracatum*, **Hoedeman** (5).

Corydoras griseus de weyeri subsp. nov. British Guiana, **Meinken** (1) p. 5 figd.

Hoplosternum, *Callichthys* notes on Surinam species, **Hoedeman** (4).

APODES

Colours in life, **Kuroda** (1).

ANGUILLIDAE

Anguilla spawning areas of African species, **Jubb**; notes on species occurring in Zambesi river system, **Frost** (2); *A. anguilla* distribution and migrations, **Raben**; food of in Baltic, **Murina**; estimation of age, using scales and otoliths, **Rahn**; scent perception, **Teichmann**; effect of hormone injection on sex, **Ancona** (5); structure of auricular muscular tissue, **Couteaux & Laurent**; cause of cauliflower disease, **Lühmann & Mann**; *A. obscura* recorded from Southern Africa, **Jubb**.

XENOCOGRIDAE

Ariosoma impressa from Puerto Rico, **Erdman**.

Kaupichthys atlanticus from Puerto Rico, **Erdman**.

MURAENIDAE

Channomuraena vittata new Puerto Rican record, **Erdman**.

Echidna delicatula, *E. leucotaenia*, *E. nebulosa*, *E. polyzona*, *E. zebra*, new Borneo records, **Inger**.

Enchelycore nigricans from Puerto Rico, **Erdman**.

Gymnothorax buroensis, *G. chilospilus*, *G. flavimarginatus*, *G. hepaticus*, *G. javanicus*, new Borneo records, **Inger**.

HETERENCHELIDAE

Heterenchelys biaggii from Puerto Rico, **Erdman**; *H. trossus* sp. nov. otolith Miocene New Zealand, **Stinton** (2) p. 514 pl. xxxii fig. 6.

NEMICHTHYIDAE

Nemichthys scolopaceus from Algerian coast, **Dieuzeide & Roland** (2).

MURAENESOCIDAE

Muraenesox cinereus spermatogenesis, **Nishikawa**.

CONGRIDAE

Heterocongrinae, key to genera, **Böhlke** (3).

Astroconger myriaster length/weight relationship, **Okada & Suzuki**; pit organ system, **Satô**.

Coloconger meadi sp. nov. Gulf of Mexico, **Kanazawa** p. 234 figd.

Conger tucutus sp. nov. otolith London Clay Bognor, **Stinton** (1) p. 18 pl. ii fig. 3.

Congermuraena mystax description of eggs, **Thomopoulos** (1).

Nystactes halis gen. et sp. nov. Green Cay, Bahamas, **Böhlke** (3) p. 68 figd.

Ophisoma balearicum description of eggs, **Thomopoulos** (1).

Uroconger minimus figd. from London Clay of Bognor, **Stinton** (1).

ECHELIDAE

Myrophis egmontis from Puerto Rico, **Erdman**.

OPHICHTHIDAE

Aplatophis charliodius from Puerto Rico, **Erdman**.

Caecula imberbis description of eggs, **Thomopoulos** (1).

Leiuranus semicinctus new Borneo record, **Inger**.

? *Mystriophis tobliquum* sp. nov. otolith Miocene New Zealand, **Stinton** (2) p. 513 pl. xxxii fig. 5.

SYNAPHOBANCHIDAE

Synaphobranchus kaupii recorded from Nabuto, Japan, **Kuroda** (3).

HETEROMI

†DERCETIDAE

Stratodus sp. rec. U. Senonian Israel, **Avnimelech**.

SYNENTOGNATHI

BELONIDAE

Key to genera, **Fernandez Yopez.**

Belone depressa Poey a valid species, **Fernandez Yopez.**

Tylosurus leiurus new Japanese record, **Kamohara (2).**

SCOMBRESOCIDAE

Scomberesox saurus Argentine specimens described, **Lopez.**

HEMIRAMPHIDAE

Euleptorhamphus velox from Puerto Rico, **Erdman.**

Hemiramphus, *Zenarchopterus*, post-larvae described and figd. from Luzon, **Blanco & Villadolid**; *H. gaimardi* C. & V. a synonym of *Hyporhamphus melanurus* (Val.), **Inger.**

EXOCOETIDAE

Bionomics and fishery, **Mohr.**

Cypselurus rondeletii new Red Sea record, **Tortonese.**

Exocoetus volitans Japanese examples discussed, **Tomiyama & Abe.**

Fodiator acutus redefinition of subspecies, **Morrow (2)**; *F. a. pacificus* Bruun a synonym of *F. a. rostratus* (Günther), **Morrow (2).**

Hemioxocoetus caudimaculatus Fowler a synonym of *Fodiator acutus rostratus* (Günther), **Morrow (2).**

Hirundichthys affinis bionomics and fishery, **Hall.**

Parexocoetus brachypterus post-larvae descr. and figd. from Luzon, **Blanco & Villadolid.**

MICROCYPRINI

AMBYLOPSIDAE

Key to genera and species of United States, distribution, **Woods & Inger.**

CYPRINODONTIDAE

Ecology; account of African and S. American annual species, **Myers.**

Natural hybrids, **Slastenenko.**

Anableps dovii breeding habits, **Trochanis.**

Aphyosemion bivittatum account of "spawning" between two males, **Nieuwenhuizen**; *A. cognatum*, colour and behaviour in aquarium, **Foersch**; *A. elegans* recorded from Stanley Pool, **Boeseman (2).**

Aplocheilichthys maculatus sp. nov. E. Africa, **Klausewitz (11)** p. 281 figd.

Aplocheilus luzonensis post larvae descr. and figd. from Luzon, **Blanco & Villadolid**; *A. panchax dorsomarginatus* subsp. nov. Thailand, **Klausewitz (9)** p. 196 figd.

Austrofundulus and *Cynolebias* secondary sexual characters **Myers.**

Cynolebias (*Leptolebias*) subgen. nov. type *Cynopoecilus marmoratus* Ladiges. 1934, **Myers** p. 140; *C. aureoguttatus* sp. nov. Paranagua, Brazil, **Myers** p. 139 figd.; *C. zingiberinus* Myers a synonym of *C. marmoratus* (Ladiges), **Myers.**

Cynopoecilus Regan a synonym of *Cynolebias* Steindachner, **Myers**; *C. sicheleri* M. Ribeiro a synonym of *Cynolebias marmoratus* (Ladiges), **Myers.**

Cyprinodon fasciatus, *C. iberus* French records, **Arnoult.**

Epiplatys multifasciatus recorded from Stanley Pool, **Boeseman (2).**

Fundulus key to species of eastern U.S.A. and Canada, **Brown (2)**; *F. cingulatus*, *F. chrysotus* distinguishing characters, **Brown (1)**; *F. hispanicus* French records, **Arnoult.**

Gambusia a revision of the *G. nobilis* species group, with key, **Hubbs, C. & Springer**; systematic study of specimens acclimatized in Russia, **Gogol**; pectoral support of gonopodium during copulation, **Hubbs & Reynolds**; *G. geiseri* sp. nov. San Marcos river, Texas, **Hubbs & Hubbs** in **Hubbs & Springer** p. 285 figd.

Gambusia heterochir sp. nov. Texas, **Hubbs, C. (4)** p. 3 figd.; reproductive behaviour, **Warburton & others**; hybridising with *G. affinis*, **Hubbs, C. (4)**; *G. hurtadoi* p. 307 figd., *G. alvarezi* p. 310 figd. spp. nov. Chihuahua, Mexico, **Hubbs, C. & Springer.**

Jenkinsia lamprotaenia schooling behaviour, **Springer, S. (2)**; *J. lineata* breeding cycle, **Turner.**

Lebistes reticulatus fibroma of heart, **Stolk** (7); rectal fibroma, **Stolk** (10); adenoma of swim bladder, **Stolk** (12); cerebral cysts and abnormal glands, **Stolk** (9); morphology of rays of anal fin, **Mohsen**; cytology of pituitary, **Vervoort**.

Leptolebias subgen. nov. of *Cynolebias* q.v.

Nothobranchius, drought - resistant eggs and conditions of life, **Hansen**.

Oryzias latipes regeneration of caudal fin, **Mori**, H.; feeding habits, **Imamura** & **Hashitani**.

Rivulus discussion of species complex, **Hoedeman** (1).

SOLENICHTHYES

AULOSTOMIDAE

Aulostomus maculatus association with scarid, **Eibl-Eibesfeldt**.

CENTRISCIDAE

Centriscus (*Amphisyle*) †*heinrichi* figd. **Snigielska**.

SYNGNATHIDAE

Corythoichthys flindersi sp. nov. S. Australia, **Scott**, T. D. p. 182 figd.

Hippocampus guttulatus histology of kidney, **Gabe**; *H. hippocampus* from Co. Clare, Ireland, **Roche** (2).

Ichthyocampus kampeni new Bornean record, **Inger**.

Phycodurus eques col'd illustration, **Hale**.

Phyllopteryx foliatus, photo of ♂ with eggs, **Hale**.

Syngnathus rostellatus recorded from British coast, **Wheeler**, A. C.

ANACANTHINI

MACROURIDAE

Cetonus microps Vaillant a nomen nudum, **Nybelin**.

Chalinura key to some N. Atlantic species, **Nybelin**; *C. profundicola* sp. nov. North Atlantic, **Nybelin** p. 268.

Coelorhynchus coelorhynchus recorded from Greenland waters, **Kotthaus** & **Kreffit**; *C. †elevatus* sp. nov. otolith Miocene New Zealand, **Stinton** (2) p. 515 pl. xxxii fig. 13.

Hymenocephalus ? sp. figd. from Oligocene E. Carpathians, **Ghorbach**.

Lionurus carapinus euabyssalis subsp. nov. North Atlantic, **Nybelin** p. 273 figd.

Trachyrhynchus †densus sp. nov. Miocene New Zealand, **Stinton** (2) p. 516 pl. xxxii fig. 15.

MERLUCCIIDAE

Merluccius merluccius size differences between populations, **Matta**; *M. merluccius*, *M. capensis*, *M. polli* reviewed, **Franca** (1).

GADIDAE

Natural hybrids, **Slastenenko**.

Morphological principles of classification, **Svetovidov** (4).

Bregmacerina gen. nov. type *Motella tricirrata antiqua* Smirnov, **Danil'chenko** p. 57 1 text-fig. Oligocene N. Caucasus.

Bregmaceros atlanticus bionomics, **Clancey**.

Gadus callarias migrations of Bear Island populations, **Trout**; distribution and ecology compared with that of *Clupea harengus*, **Svetovidov** (2); pancreas as source of insulin, **Roy**; *G. poutassou* distribution of young, **Henderson**; *G. †subnotus* otolith figd. from London Clay of Bognor, **Stinton** (1).

Gaidropsarus ensis from E. Greenland waters, **Kotthaus** & **Kreffit**.

Melanonus unipennis from Gulf of Mexico, **Grey**.

Pollachius virens biology and fishery in Barents Sea, **Mironova** (2).

Raniceps †planus otolith figd. from London Clay of Bognor, **Stinton** (1).

Urophycis blennoides from Irish waters, **Gibson** (4).

Ot. (*Gadidarum*) †*laevigatum* sp. nov. Miocene New Zealand, **Stinton** (2) p. 515 pl. xxxii fig. 7. Ot. (*Gadidarum*) †*ponticum* sp. nov. Pannonian Vienna Basin, **Papp** & **Thenius** p. 39 pl. vi figs. 47, 48.

ALLOTRIOGNATHI

LOPHOTIDAE

†*Protolophotus* gen. nov. type *Lophotus elami* Arambourg, **Walters** (1) p. 60.

BERYCOMORPHI

POLYMIXIIDAE

Polymixia lowei from Puerto Rico, Erdman.

BERYCIDAE

Beryx decadactylus European and Norwegian records, Willgohe; *B. splendens* from Gulf of Mexico, Woods.

DIRETMIDAE

Diretmus argenteus from Gulf of Mexico, Grey.

CARISTIIDAE

Caristius macropus recorded from British Columbia, Welander, Alverson & Bergman.

MONOCENTRIDAE

Monocentris tlemoinei otolith figd. from London Clay of Bognor, Stinton (1); *M. reedi* sp. nov. Chile, Schultz (1) p. 238 figd.

HOLOCENTRIDAE

Holocentrus cornutus, *H. lacteoguttatus*, *H. sammara* new Bornean records, Inger.

Osteichthys trachypomus from Puerto Rico, Erdman.

Plectrypops retrospinis from Puerto Rico, Erdman.

MELAMPHAIDAE

Melamphaes cristiceps recorded from Japanese waters, Maruyama.

ZEOMORPHI

Larvae and juveniles from the Mediterranean, Padoa & others.

ZEIDAE

Alloctytus verrucosus recorded from North Pacific, Welander & others.

Parazen pacificus first Atlantic record, described and figd., Mead (1).

Xenocyttus gen. nov. p. 225 type *X. nemotoi* sp. nov. Antarctic p. 228 figd., Abe (3).

PERCOMORPHI

PERCOIDEA

Larval and juvenile forms from the Mediterranean, Padoa & others.

SERRANIDAE

Alphestes scholanderi sp. nov. Bahamas, Walters (2) p. 283 figd.

Anyperodon leucogrammicus new Bornean record, Inger.

Aporops japonicus sp. nov. Riu Kiu Islands, Kamohara (3) p. 21 figd.

Dermatolepis inermis from Puerto Rico, Erdman.

Ellerkeldia annulata recorded from Queensland, Marshall, T. C.

Epinephelus corallicola, *E. merra*, new Bornean records, Inger; *E. fusco-guttatus*, *E. morrhua* post larvae descr. and figd. from Luzon, Blanco & Villadolid; *E. gigas* from Irish waters, Went (4); *E. leprosus* recorded from Mozambique, Smith, J. L. B. (5); *E. mystacinus* from Puerto Rico, Erdman; *E. †ovalis* sp. nov. otolith London Clay Bognor, Stinton (1) p. 23 pl. ii figd.; *E. striatus*, association with *Elacatinus*, Eibl-Eibesfeldt.

Grammistes sexlineatus new Bornean record, Inger.

Labrax (Morone) †*serrata* sp. nov. otoliths Pannonian Vienna Basin, Papp & Thenius p. 38 pl. vi figs. 31, 32.

Luzonichthys Herre, species included in genus, Smith, J. L. B. (7).

Mycteroperca interstitialis, *M. venenosa* from Puerto Rico, Erdman.

Prionodes tigrinus, *P. phoebe*, *P. tabacaria* from Puerto Rico, Erdman.

Promicrops sp., photograph, Scott, J. S.; *P. itaiara* from Puerto Rico, Erdman; *P. lanceolatus* figd., Whitley (2).

Roccus comparative osteology, Woolcott.

Therapon jarbua feeding habits, Imamura & Hashitani.

Otolithus (*Serranidarum*) †*undulatus* sp. nov. London Clay Bognor p. 22 pl. ii fig. 9; Ot. (*S.*) *minsterensis* figd., Stinton (1).

PSEUDOCROMIDAE

Nematochromis annae new Bornean record, Inger.

PLESIOPIDAE

Plesiops coeruleolineatus new Bornean record, Inger.

Pseudoplesiops typus new Australian record, Marshall, T. C.

CENTRARCHIDAE

Natural hybrids, Slastenenko.

Archoplites interruptus osteology, Dineen & Stokely.

Chaenobryttus gulosus bionomics, Larimore.

Lepomis gibbosus × *L. macrochirus* fertility and characters of F_1 hybrids, Lagler & Steinmetz; *L. macrochirus* bionomics, Mayhew (1).

Micropterus coosae absent from Californian waters, Kimsey (1); *M. dolomieu* *dolomieu* age and growth of a 'stunted' population, Suttkus (1); *M. salmoides* results of a tagging programme, Kimsey (2).

PRIACANTHIDAE

Pseudopriacanthus altus first record for Maine coast, Scattergood & Coffin.

APOGONIDAE

Apogon post larvae descr. and figd. from Luzon, Blanco & Villadolid; *A. tbellovacinus* otolith figd. from London Clay of Bognor, Stinton (1); *A. binotatus* from Puerto Rico, Erdman; *A. cardinalis*, *A. novemfasciatus* new Bornean records, Inger; *A. pigmentarius*, *A. pseudomaculatus* northern extension of range, Caldwell & Briggs.

Pomatomichthys constanciae juvenile forms described and compared with young of *Pomatomus telescopium*, Cavalieri.

PERCIDAE

Growth study in north German eutrophic waters, Tesch.

Natural hybrids, Slastenenko.

Etheostoma blennioides, *E. caeruleum*, *E. spectabile* egg site selection, Winn; *E. lepidum* factors affecting fecundity, Hubbs & Strawn (1); *E. spectabile* × *Percina caprodes* relative variability of hybrids, Hubbs & Strawn (2).

Lucioperca lucioperca larval development, Dmitrieva (1); Vasnetzov & others.

Perca flavescens diurnal activity, Brown & Rosen; *P. fluviatilis*, food of in Volga delta, Ivanova, M. N.; of Lough Rea, Co. Galway, Healy (3); factors influencing sexual cycle, Morozova, T. E.; discovery of a plexus in digestive tube, Milokhin (2); *P. fluviatilis*, *P. schrenki* and *Lucioperca lucioperca* comparison of developmental stages, Konstantinov.

Percarina demidoffi maeotica feeding habits, Kanaeva.

Sander lucioperca food of in Roumanian waters, Vasiliu & Nicolau (1).

Stizostedion v. vitreum age and growth, Rose.

Ot. (*Percidarum*) *tuawaensis* sp. nov. Miocene New Zealand, Stinton (2) p. 516 pl. xxxii fig. 8.

LATILIDAE

Malacanthus hoedtii new Australian record, Marshall, T. C.

SILLAGINIDAE

Sillago analis new Queensland record, Haysom.

RACHYCENTRIDAE

Rachycentron canadus from Buzzards Bay, Mass., Mather & Gibbs; from Puerto Rico, Erdman.

CARANGIDAE

Evolution, Aleev (7).

Angolan species, Franca (2).

Alectis crinitus from Alabama coast, Boschung; from Puerto Rico, Erdman.

Caranx lugubris, *C. guara* from Puerto Rico, Erdman; *C. trachurus* description of eggs, Thomopoulos (1).

Decapterus macarellus from Puerto Rico, Erdman.

Elagatis bipinnulatus from Puerto Rico, Erdman.

Seriola dumerili from Puerto Rico, Erdman.

Trachurus systematics of species in USSR waters, Aleev (6); taxonomy of Black Sea species, Aleev (4); *T. mediterraneus ponticus* commercial use in Black Sea, Tikhonov; *T. trachurus* reproduction, Tkacheva; *T. trachurus mediterraneus* feeding habits, Pora & others; movements in Black Sea, Nicolae & Cautis; *T. trachurus trachurus* structure and use of lateral muscles, Hasan.

BRAMIDAE

Brama raii from Puerto Rico, **Erdman**; from Moy river, Ireland, **Roche** (1).

Centropholoides Smith a synonym of *Pterycombus* Fries, **Caldwell & Briggs**.

Centropholis Hilgendorf a synonym of *Pterycombus* Fries, **Caldwell & Briggs**.

Collybus drachme recorded from Gulf of Mexico, **Mead** (2).

Pterycombus goodei recorded from Gulf of Mexico, **Caldwell & Briggs**.

Taractes key to species, **Mead** (2); *T. longipinnis* recorded from Gulf of Mexico; growth changes, **Mead** (2).

CORYPHAENIDAE

Coryphaena hippurus bionomics, **Williams & Newell**; recorded from Aldabra, **Smith, J. L. B.** (2); occurrence in a Texas bay, **Pew**.

CENTROPOMIDAE

Ambassis urotaenia new Bornean record, **Inger**.

Centropomus ensiferus from Puerto Rico, **Erdman**; *C. †superpendens* otolith figd. from London Clay of Bognor, **Stinton** (1).

Gymnochanda filamentosa gen. et sp. nov. Singapore, **Boeseman** (1) p. 75 figd.

Psammoperca †sheppeyensis otolith figd. from London Clay of Bognor, **Stinton** (1).

EMMELICHTHYIDAE

Emmelichthys nitidus new Japanese record, **Kamohara** (2).

LUTIANIDAE

Aphareus rutilans recorded from Mozambique, **Smith, J. L. B.** (5); recorded from Riu-Kiu Islands, **Kamohara** (3).

Caesio †bognoriensis sp. nov. otolith London Clay Bognor, **Stinton** (1) p. 25 pl. ii fig. 15.

Lutianus key to E. African species, with descriptions, **Talbot**; *L. analis* first Gulf of Maine record, **Mather & Gibbs**; *L. buccanella* from Puerto Rico, **Erdman**; *L. niger* recorded from Riu-Kiu Islands, **Kamohara** (3); *L. russelli*, new Bornean record, **Inger**.

Pentapus caninus new Bornean record, **Inger**.

Pristipomoides filamentosus roseus Japanese examples discussed, **Tomiyama & Abe**; *P. macrophthalmus* from Puerto Rico, **Erdman**; *P. typus* recorded from Mozambique, **Smith, J. L. B.** (5).

NEMIPTERIDAE

Nemipterus tolu new Australian record, **Marshall, T. C.**

LEIOGNATHIDAE

Pentaprin longimanus new Australian record, **Marshall, T. C.**

POMADASYIDAE

Brachygenys chrysargyreus from Puerto Rico, **Erdman**.

Pomadasyus †ovalis sp. nov. otolith London Clay Bognor, **Stinton** (1) p. 26 pl. ii fig. 16.

SCIAENIDAE

Aplodinotus grunniens food of, **Moen**; *Eques punctatus* recorded from Florida, **Caldwell & Briggs**.

Johnius carutta new Australian record, **Marshall, T. C.**

Micropogon undulatus distribution and growth, **Haven**.

Stellifer stellifer from Puerto Rico, **Erdman**.

MULLIDAE

Mullus barbatus age and growth in Israel waters and description of post-larvae, **Gottlieb**.

Parupeneus malabaricus new Bornean record, **Inger**.

Upeneus sundaicus new Australian record, **Marshall, T. C.**

LETHRINIDAE

Gnathodentex mossambicus sp. nov. Mozambique, **Smith, J. L. B.** (5) p. 122 figd.

Pentapodus microdon new Australian record, **Marshall, T. C.**

SPARIDAE

Chrysophrys auratus weight and length data, **Cassie**.

Dentex †pentagonalis sp. nov. otolith London Clay Bognor, **Stinton** (1) p. 26 pl. ii fig. 17.

Lagodon rhomboides systematics and bionomics, **Caldwell**.

Mylio latus, *M. macrocephalus* ecological study on young, **Kasahara**.

Sargus puntazzo, *Oblada melanura*, description of eggs, **Thomopoulos (1)**.

Taius tumifrons regeneration of scales, **Aoyama**.

†*Ot. (Sparidarum) kuhni* sp. nov. p. 35 pl. vi figs. 39, 40; and subsp. *gracilis* ssp. nov. p. 35 pl. vi figs. 41, 42; *Ot. (S.) brunnense* sp. nov. p. 35 pl. vi figs. 43, 44 all Pannonian Vienna Basin, **Papp & Thenius**.

MAENIDAE

Smaris insidiator description of eggs, **Thomopoulos (1)**.

PEMPHERIDAE

Pempheris mulleri from Puerto Rico, **Erdman**.

KYPHOSIDAE

Kyphosus vaiigiensis post-larvae described and figd. from Luzon, **Blanco & Villadolid**.

GIRELLIDAE

Girella elevata new Queensland record, **Marshall, T. C.**

SCATOPHAGIDAE

Scatophagus argus post-larvae descr. and figd. from Luzon, **Blanco & Villadolid**.

CHAETODONTIDAE

Natural hybrids, **Slattenenko**.

Anisochaetodon pictus Forskål a valid species, **Klausewitz (7)**.

Chaetodon ocellatus, *C. striatus* recorded from Florida, **Caldwell & Briggs**; *C. rafflesi*, *C. vagabundus* new Bornean records, **Inger**; *C. sedentarius* from Puerto Rico, **Erdman**; *C. speculum* new Australian record, **Marshall, T. C.**; *C. vitulus* sp. nov. Jervis Bay, N.S.W., **Whitley (2)** p. 63 figd.

Holacanthus ciliaris range extension into north eastern Gulf of Mexico, **Caldwell & Briggs**.

Pomacanthus arcuatus from Puerto Rico, **Erdman**.

HISTIOPTERIDAE

Paristiopterus gallipavo new Queensland record, **Marshall, T. C.**

Pseudopentaceros richardsoni recorded from Japanese waters, **Abe (1)**; recorded from North Pacific, **Welander & others**.

Quinquarius Jordan a synonym of *Pseudopentaceros* Gill, **Welander & others**.

NANDIDAE

Badis badis siamensis subsp. nov. Thailand, **Klausewitz (9)** p. 199 figd.

CICHLIDAE

Astronotus ocellatus regeneration of cranial nerve with re-innervation of muscles after severing, **Arora & Sperry**.

Cichlasoma Swainson retained in preference to *Cichla* Swainson, **Bailey**; *C. biocellatum* changes in pituitary due to thyroidal tumour, **Stolk (1)**; *C. facetum* multiple cysts in nervous system, **Stolk (8)**.

Crenicichla jaguarensis, *Geophagus brasiliensis* Pirassununga specimens described, **Travassos & Pinto**.

Gephyrochromis lawsi sp. nov. L. Nyasa, with ecological notes, **Fryer** p. 346 figd.

Haplochromis mellandi used for mollusc control, **Bont (2) & (3)**; **Bont-Hers, A. F. & M. J. de**; *H. multicolor* structure of pharyngeal glands, **Stolk (11)**; adenoma of pharyngeal glands, **Stolk (12)**; *H. sawagei*, *H. prodromus*, *H. granti* synonymy, distribution and ecology, **Greenwood (1)**; *H. xenognathus* sp. nov. Lake Victoria, **Greenwood (1)** p. 90 figd.

Hemichromis bimaculatus from Tunisia, **Postel (2)**.

Nannacara anomala, parental care, **Kuenzer**.

Pterophyllum eimekei, probable mutant, **Buschendorf**.

Symphysodon discus, structure of egg and larva, parental care, **Wickler (1)**.

Tilapia palaeolithic remains from Mumba Cave, E. Africa, **Greenwood (2)**; *T. leucosticta* diagnosis and biology, **Lowe**; *T. mossambica*, main, accessory and emergency sources of food, **Vaas**.

CEPOLIDAE

Acanthocephala abbreviata new Australian record, **Haysom**.

Cepola rubescens from Co. Waterford, Ireland, **Gibson (3)**.

CIRRHITIDAE

Cirrhitoides unimaculata sp. nov. Kago-shima Prefecture, Japan, **Kamohara** (3) p. 29 figd.

APLODACTYLIDAE

Crinodus lophodon new Queensland record, **Marshall, T. C.**

CHEILODACTYLIDAE

Morwong gen. nov. type *Chilodactylus fuscus* Castelnau, **Whitley** (2) p. 65.

Nemadactylus douglasii, *N. macropterus*, figd., **Whitley** (2).

EMBIOTOCIDAE

Ditrema †*sheppeyensis* otolith figd. from London Clay of Bognor, **Stinton** (1); *D. temmincki* reproductive cycle, **Ishii**.

POMACENTRIDAE

Abudefduf anabatoides, *A. oxyodon*, *A. sexfasciatus*, new Bornean records, **Inger**; *A. azysron* new Red Sea record, **Baschieri-Salvadori**; *A. saxatilis* northern extension of range, **Caldwell & Briggs**.

Amphiprion frenatus, *A. percula* new Bornean records, **Inger**; *A. percula*, sound production in aquarium, **Koenig**; *A. xanthurus* new Red Sea record, **Baschieri-Salvadori**.

Cheiloprion labiatus new Bornean record, **Inger**; new Australian record, **Marshall, T. C.**

Chromis bitaeniatus new Australian record, **Marshall, T. C.**; *C. marginatus*, *C. cyanea* from Puerto Rico, **Erdman**; *C. ternatensis* new Red Sea record, **Baschieri-Salvadori**.

Chrysiptera melanomaculata sp. nov. Palau Isl., **Aoyagi** p. 180 figd.

Dascyllus aruanus, eggs and larva, **Chlupaty**; *D. carneus*, sound-production in aquarium, **Koenig**; *D. trimaculatus* ethology, **Garnaud** (2).

Pomacentrus albicaudatus sp. nov. Red Sea, **Baschieri-Salvadori** p. 64 figd.; *P. bifasciatus*, *P. chrysopoecilus*, *P. chrysurus*, *P. moluccensis*, *P. perspicillatus*, *P. prosopotaenia* new Bornean records, **Inger**; *P. taeniurus* new Red Sea record, **Baschieri-Salvadori**; *P. xanthurus* northward extension of range, **Caldwell & Briggs**.

LABRIDAE

Keys to Chinese genera and species, **Fowler** (1).

Key to genera of Western Indian Ocean, **Smith, J. L. B.** (12).

Anampses twistii recorded from Pemba and Mozambique, **Smith, J. L. B.** (12).

Aspiurochilus subgen. nov. of *Lepidaplois* q.v.

Choerodon robustus recorded from Seychelles, **Smith, J. L. B.** (12).

Cirrhilabrus exquisitus sp. nov. Pinda, W. Indian Ocean, **Smith, J. L. B.** (12) p. 109 figd.

Clepticus, association with *Thalassoma*, **Eibl-Eibesfeldt**.

Coris key to W. Indian Ocean species, **Smith, J. L. B.** (13); *C. frerei* recorded from E. Africa, **Smith, J. L. B.** (12); *C. gaimard africana* subsp. nov. Seychelles, **Smith, J. L. B.** (13) p. 119 figd.; *C. grenovii* Bennett juvenile form of *C. gaimard*, **Smith, J. L. B.** (12); *C. julis* description of eggs, **Thomopoulos** (1); sex reversal in old females, **Reinboth**; *C. multicolor* Rüppell young stages of *C. caudimaculata*, **Smith, J. L. B.** (12); *C. philippina* recorded from Riu-Kiu Islands, **Kamohara** (3).

Cossyphus unilineatus Guichenot probably synonymous with *Labrichthys cyanotaenia* Bleeker, **Smith, J. L. B.** (12).

Crenilabrus pavo skin carotenoids, **Abolins & Abolins-Krogis**.

Diproctacanthus xanthurus new Bornean record, **Inger**.

Duohemipteronotus subgen. nov. of *Hemipteronotus* q.v.

Duymaeria flagellifera new Bornean record, **Inger**.

Fowlerella gen. nov. type *Labroides bicolor* Fowler & Bean, **Smith, J. L. B.** (12) p. 104.

Halichoeres amboinensis, *H. gymnocephalus*, *H. leparensis*, *H. nigrescens* new Bornean records, **Inger**; *H. maculipinna*, *H. bivittata* from Puerto Rico, **Erdman**; *H. marginatus* recorded from Mozambique, **Smith, J. L. B.** (12); *H. notophthalmus* recorded from E. Africa, **Smith, J. L. B.** (12).

Hemipteronotus (*Duohemipteronotus*) subgen. nov. type *Hemipteronotus evides* Jordan & Richardson, **Fowler** (1) p. 281.

Labroides dimidiatus new Bornean record, **Inger**.

Lepidaplois albomaculatus sp. nov. Mauritius, **Smith, J. L. B. (12)** p. 101 figd.; *L. luteopunctatus* sp. nov. Delagoa Bay, **Smith, J. L. B. (12)** p. 102 figd.; *L. (Aspiurochilus)* subgen. nov. type *Crenilabrus steinegeri* Ishikawa, **Fowler (1)** p. 176.

Macropharyngodon bipartitus p. 104 figd., *M. variabilis* p. 105 figd., spp. nov. Mozambique, **Smith, J. L. B. (12)**; *M. meleagris* recorded from Delagoa Bay, **Smith, J. L. B. (12)**.

Pseudochelinus evanidus recorded from Aldabra, **Smith, J. L. B. (12)**.

Stethojulis albovittata, *S. axillaris*, *S. renardi*, *S. strigiventer* recorded from Natal, **Smith, J. L. B. (12)**; *S. kalosoma*, *S. phekadopleura*, *S. trilineata* new Bornean records, **Inger**.

Suezia gen. nov. type *Labrichthys caudovittatus* Steindachner, **Smith, J. L. B. (12)** p. 106.

Thalassoma see *Clepticus*; *T. hardwicki* new Bornean record, **Inger**; *T. quinquevittatus* recorded from S. Africa, **Smith, J. L. B. (12)**; *T. schwanefeldi*, *T. albolineum* recorded from Riu-Kiu Islands, **Kamohara (3)**.

Wetmorella albobasiciata recorded from Aldabra, **Smith, J. L. B. (12)**; *W. philippina* recorded from Seychelles and Mozambique, **Smith, J. L. B. (12)**; *W. philippina bifasciata* Schultz & Marshall not valid, **Smith, J. L. B. (12)**.

Xiphocheilus quadrimaculatus recorded from Queensland, **Marshall, T. C.**

SCARIDAE

Keys to genera and species of China, **Fowler (1)**.

Callyodon dubius, *C. lazulinus*, recorded from W. Indian Ocean, **Smith, J. L. B. (2)**; *C. formosus* new Australian record, **Marshall, T. C.**; *C. pectoralis* recorded from Riu-Kiu Islands, **Kamohara (3)**; *C. scaber*, *C. madagascariensis*, *C. improvisus* recorded from Aldabra, **Smith, J. L. B. (2)**.

Chlorurus microcheilus recorded from W. Indian Ocean, **Smith, J. L. B. (2)**; *C. microrhinus* recorded from Riu-Kiu Islands, **Kamohara (3)**.

Pseudoscarus coelestinus from Puerto Rico, **Erdman**.

Scarus post larvae descr. and figd. from Luzon, **Blanco & Villadolid**; *S. acutus* from Puerto Rico, **Erdman**.

Sparisoma radians from Puerto Rico, **Erdman**; recorded from Corpus Christi Bay, Texas, **Leary (1)**.

Xanothon bataviensis recorded from Riu-Kiu Islands, **Kamohara (3)**; *X. capistratoides*, *X. pentazona*, *X. oktodon* recorded from W. Indian Ocean, **Smith, J. L. B. (2)**; *X. carifanus*, *X. parvidens* recorded from Aldabra, **Smith, J. L. B. (2)**.

AMMODYTIDAE

Ammodytes †*pseudocacuminatus* otolith figd. from London Clay of Bognor, **Stinton (1)**.

Bleekeria renniei sp. nov. S. Africa, **Smith, J. L. B. (14)** p. 219 figd.

OPISTHOGNATHIDAE

Opisthognathus maxillosus from Puerto Rico, **Erdman**; *O. rosenbergi* new Bornean record, **Inger**; *O. whitehursti*, *O. maxillosus* oral incubation, **Böhlke & Chaplin**.

PINGUIPEDIDAE

Parapercis key to species of China, **Fowler (1)**.

TRACHINIDAE

Trachinus draco from Co. Waterford, Ireland, **Gibson (2)**.

LIMNICHTHYIDAE

Chalixodytes chameleontoculis sp. nov. Seychelles, **Smith, J. L. B. (4)** p. 890 figd.

URANOSCOPIIDAE

Key to genera and species of China, **Fowler (1)**.

Ichthyoscopus fasciatus sp. nov. North Queensland, **Haysom** p. 139 figd.

CHIASMODONTIDAE

Chiasmodon niger niger first record from Greenland waters, **Kotthaus & Krefft**.

Pseudoscopus scriptus from Puerto Rico, **Erdman**.

NOTOTHEINIIDAE

Notothenia †*tenuis* sp. nov. otolith Miocene New Zealand, **Stinton (2)** p. 516 pl. xxxii fig. 14.

ACANTHUROIDEA

ACANTHURIDAE

Natural hybrids, **Slastenenko**.

Acanthurus chirurgus, *A. coeruleus* extension of range in Gulf of Mexico, **Caldwell & Briggs**; *A. chrysosoma* new Bornean record, **Inger**; *A. randalli* sp. nov. Gulf of Mexico, **Briggs & Caldwell** p. 43 figd.

Rhinodactylus baixopindae gen. et sp. nov. Mozambique, **Smith, J. L. B.** (1) p. 686 figd.

SIGANOIDEA

SIGANIDAE

Siganus oramin, *S. stellatus*, *S. coralinus* recorded from Aldabra, **Smith, J. L. B.** (2).

TRICHIUROIDEA

GEMPYLIDAE

Notes on larval forms from Bermuda, **Voss, N. A.**

Gempylus serpens from Puerto Rico, **Erdman**.

TRICHIURIDAE

Evoxymetopon taeniatum notes on a specimen from Gulf of Mexico, **Tucker**.

SCOMBROIDEA

Larval and juvenile forms from the Mediterranean, **Padoa & others**.

SCOMBRIDAE

Natural hybrids, **Slastenenko**.

Summary of research in progress, **Voss, G. L. & Robins**.

Acanthocybium solandri from Alabama coast, **Boschung**; recorded from Aldabra, **Smith, J. L. B.** (2).

Auxis thazard first record for Gulf of Maine, **Mather & Gibbs**; recorded from Aldabra, **Smith, J. L. B.** (2).

Euthynnus alleteratus, *E. pelamis*, recorded from Aldabra, **Smith, J. L. B.** (2).

Gasterochisma melampus recorded from Victoria, N.S.W., **Whitley** (2).

Germo albacora recorded from Aldabra, **Smith, J. L. B.** (2).

Gymnosarda unicolor from W. Indian Ocean, **Smith, J. L. B.** (2).

Neothunnus macropterus spawning areas and size at sexual maturity, **Yuen & June**; *N. macropterus*, *Parathunnus sibi* comparative food study, **King & Ikehara**.

Parathunnus mebachi first Australian record, **Munro** (2).

Rastrelliger kanagurta feeding habits' **Kuthalingam**; recorded from Aldabra, **Smith, J. L. B.** (2).

Sarda orientalis recorded from Aldabra, **Smith, J. L. B.** (2).

Scomber scombrus population study, **Francesco**.

Scomberomorus cavalla from Buzzards Bay, Mass., **Mather & Gibbs**; *S. commerson*, *S. guttatus* recorded from Aldabra, **Smith, J. L. B.** (2).

Thunnus alalunga taken off Delaware Bay, **Mather & Gibbs**; *T. thynnus* of E. and W. Atlantic alike in meristic characters, *T. saliens* distinct, **Robins** (2); biometric study, **Genovese**; recorded from Puerto Rico, **Erdman**; structure of pancreas, spleen, liver and intestine, **Vallmitjana & Gadea**; study on North Sea population, **Tiews**.

LUVARIDAE

Luvarus imperialis recorded from Chilean waters, **Buen** (3).

ISTIOPHORIDAE

Research in progress, **Voss, G. L. & Robins**.

Istiophorus americanus from Puerto Rico, **Erdman**; age and growth, **de Sylva**; study of a developmental series, spawning areas, food, **Gehringer**.

Makaira ampla, *M. albida* from Puerto Rico, **Erdman**.

XIPHIIDAE

Research in progress, **Voss, G. L. & Robins**.

†*Palaeorhynchus glaronensis* figd., **Smigielska**.

Xiphias gladius length/weight relationship; parasites, **Postel** (1).

GOBIOIDEA

Larval and juvenile forms from the Mediterranean, **Padoa & others**.

ELEOTRIDAE

Asteropteryx semipunctatus recorded from Aldabra, **Smith, J. L. B. (3).**

Eleotriodes longipinnis Japanese examples discussed, **Tomiyama & Abe**; *E. strigatus*, *E. sexguttatus*, recorded from W. Indian Ocean, **Smith, J. L. B. (3).**

Eleotris fusca recorded from Aldabra, **Smith, J. L. B. (3).**

Eviota post larvae descr. and figd. from Luzon, **Blanco & Villadolid**; *E. distigma* new Bornean record, **Inger**; *E. gymnocephalus* Weber a synonym of *E. prasinus* (Klunzinger), **Smith, J. L. B. (3)**; *E. zonura*, *E. prasinus*; *E. prasites* recorded from Aldabra, **Smith, J. L. B. (3).**

Eviotops gen. nov. p. 825 type *E. infulatus* sp. nov. p. 826 figd., Mahé, **Smith, J. L. B. (3).**

Kribia revision of genus, **Lambert.**

Metagobius sclateri recorded from W. Indian Ocean, **Smith, J. L. B. (3).**

Platycephalops gen. nov. type *Eleotris polyzonatus* Klunzinger, **Smith, J. L. B. (3)** p. 822 figd.

Pogonoculius zebra recorded from Indian Ocean, **Smith, J. L. B. (3).**

Ptereleotris microlepis recorded from Aldabra, **Smith, J. L. B. (3)**; *P. tricolor* sp. nov. Mozambique, **Smith, J. L. B. (3)** p. 817 figd.

Trimma naudei sp. nov. Mahé, **Smith, J. L. B. (3)** p. 828 figd.

GOBIIDAE

Taxonomic notes, **Ilyin (1).**

Sensory papillae, **Satô.**

Acanthogobius flavimanus feeding habits, **Imamura & Hashitani.**

Acentrogobius ornatus, *A. reichei* new Bornean records, **Inger.**

Amblygobius albimaculatus recorded from Aldabra, **Smith, J. L. B. (2)**; *A. phalaena* new Bornean record, **Inger.**

Barbulifer cauthoecus from Puerto Rico, **Erdman.**

Bathygobius fuscus new Bornean record, **Inger**; recorded from Aldabra, **Smith, J. L. B. (2).**

Boleophthalmus caeruleomaculatus new Queensland record, **Marshall, T. C.**

Callyogobius hasseltii from W. Indian Ocean, **Smith, J. L. B. (2).**

Chonophorus ocellaris post larvae described and figd. from Luzon, **Blanco & Villadolid.**

Cryptocentrus octofasciatus recorded from Aldabra, **Smith, J. L. B. (2).**

Ctenogobius nocturnus sp. nov. Aldabra, **Smith, J. L. B. (2)** p. 723 figd.

Elacatinus oceanops, association with *Epinephelus*, **Eibl-Eibesfeldt.**

Erotelis smaragdus from Puerto Rico, **Erdman.**

Favonigobius exquisitus new Queensland record, **Marshall, T. C.**

Fusigobius neophytus recorded from W. Indian Ocean, **Smith, J. L. B. (2).**

Gladiogobius ensifer recorded from W. Indian Ocean, **Smith, J. L. B. (2).**

Glossogobius key to Indo-Australian species, **Inger**; *G. giuris* recorded from Aldabra, **Smith, J. L. B. (2)**; *G. sandakanensis* sp. nov. N. Borneo, **Inger** p. 393 figd.

Gnatholepis thompsoni from Puerto Rico, **Erdman.**

Gobiodon ceramensis new Queensland record, **Fowler (2)**; *G. citrinus* recorded from Aldabra, **Smith, J. L. B. (2)**; *G. citrinus*, *G. erythropsilus* new Bornean records, **Inger.**

Gobionellus claytoni from Puerto Rico, **Erdman.**

Gobiosoma novemlineatum, *G. oceanops*, *G. horsti*, from Puerto Rico, **Erdman.**

Gobius dorsorostralis sp. nov. p. 38 pl. vi figs. 49, 50 and *G. d. sculpta* subsp. nov. otoliths Pannonian Vienna Basin, **Papp & Thenius**; *G. ebriosus* from Puerto Rico, **Erdman**; *G. lidwilli*, early development, **Dôtu (2)**; *G. (Macrogobius) paganellus* occurrence in Black Sea, **Ilyin (2)**; *G. syrman*, *G. fluviatilis* biological rôle in Razelm waters, Roumania, **Banarescu (2).**

Lophogobius cyprinoides from Puerto Rico, **Erdman.**

Luciogobius elongatus figd., **Dôtu (1)**; *L. guttatus* bionomics, **Dôtu (3)**; *L. pallidus* Regan a synonym of *L. albus* Regan, **Dôtu (1)**; *L. saikaiensis* sp. nov. Kyushu, **Dôtu (1)** p. 71 figd.

Neogobius melanostomus, *N. syrman* gas exchange, **Shulman & others**; cutaneous respiration, **Shulman.**

Oxyurichthys microlepis new Australian record, **Marshall, T. C.**; *O. tentaculalis* new Japanese record, **Kamohara (2)**.

Paragobiodon echinocephalus recorded from Aldabra, **Smith, J. L. B. (2)**.

Periophthalmus cantonensis recorded from Aldabra, **Smith, J. L. B. (2)**.

Proterorhinus marmoratus recorded from Austrian waters, **Bauer & Schubert**; occurrence in Neusiedler Lake, Austria, **Sochurek**.

Pseudogobius javanicus new Bornean record, **Inger**.

Rhinogobius mowbrayi from Puerto Rico, **Erdman**.

Seychellea **Smith, J. L. B.** a synonym of *Koumansetta* **Whitley, Whitley (2)**; *S. hectori* **gen. et sp. nov.** Mahé, E. Africa, **Smith, J. L. B. (2)** p. 726 figd.

Triaenopogon barbatus bionomics, **Dôtu (5)**.

Vaimosa piapensis post larvae descr. and figd. from Luzon, **Blanco & Villadolid**.

GOBIOIDIDAE

Gobioides brissonnetii from Alabama coast, **Boschung**.

Tyntilastes brevis taken in Gulf of Panama, **Clemens**.

TAENIOIDIDAE

Odontamblyopus rubicundus bionomics, **Dôtu (4)**.

CALLIONYMOIDEA

Larval and juvenile forms from the Mediterranean, **Padoa & others**.

CALLIONYMIDAE

Callionymus festivus from Algerian coast, **Dieuzeide & Roland (2)**; *C. garthi* **Seale** a synonym of *C. atrilabiatus* **Garman**; extension of range, **Böhlke & Cohen**.

Synchiropus altivelis taxonomy and bionomics, **Azazaki**; *S. ocellatus* new Bornean record, **Inger**.

BLENNIOIDEA

Larval and juvenile forms from the Mediterranean, **Padoa & others**.

BLENNIDAE

Key to Australian genera related to *Tripterygion*, **Scott, T. D.**

Acanthemblemaria key to Atlantic species, **Böhlke (2)**; *A. chaplini* **sp. nov.** Bahamas, **Böhlke (2)** p. 37 figd.; *A. spinosa*, *A. aspera*, *A. variegata* new Bahaman records, **Böhlke (2)**.

Alticops periophthalmus, *A. edentulus* recorded from Aldabra, **Smith, J. L. B. (4)**.

Aspidontus taeniatus, *A. filamentosus* recorded from Aldabra, **Smith, J. L. B. (4)**.

Atrosalaris fuscus new Bornean record, **Inger**.

Blennius adaptation to environment, **Lecal**; *B. fluviatilis* description of larvae, **Wickler (2)**; *B. pholis* bionomics, **Qasim**.

Brachynectes **gen. nov.** p. 180 type *B. fasciatus* **sp. nov.** p. 181 figd., S. Australia, **Scott, T. D.**

Chaenopsis key to species, **Böhlke (4)**; *C. alepidota californiensis* **subsp. nov.** California, **Böhlke (4)** p. 99 figd.; *C. coheni* Gulf of California p. 90 figd., *C. deltarrhis* Gorgona Is., Colombia p. 93, *C. schmitti* Galapagos Archipelago p. 94 **spp. nov.**, **Böhlke (4)**.

Cirripectus leopardus recorded from Aldabra, **Smith, J. L. B. (4)**.

Coralliozetes **Evermann** and **Marsh** a synonym of *Emblemaria* **Jordan** and **Gilbert**, **Böhlke (2)**.

Emblemaria, *Hemiemblemaria* key to Bahaman species, **Böhlke (2)**; *E. angelica* **sp. nov.** Baja California, **Böhlke & Mead** p. 2 figd.; *E. cardonae*, *E. diaphana* new Bahaman records, **Böhlke (2)**; *E. marki* **Mowbray** a synonym of *E. atlantica* **Jordan** and **Evermann**, **Böhlke (2)**; *E. pandionis* new record from British Honduras, **Böhlke (2)**.

Enchelyurus kraussi new Australian record, **Haysom**; recorded from W. Indian Ocean, **Smith, J. L. B. (4)**.

Entomacrodus striatus, *E. vermiculatus* recorded from Aldabra, **Smith, J. L. B. (4)**.

Gunellichthys pleurotaenia new Bornean record, **Inger**.

Halmablennius fasciatus recorded from Aldabra, **Smith, J. L. B. (4)**; *H. lineatus* recorded from W. Indian Ocean, **Smith, J. L. B. (4)**.

Hemiemblemaria simulus new Bahaman record, **Böhlke (2)**.

Lophalticus gen. nov. type *Salarias kirkii* (Gunther), **Smith, J. L. B. (4)** p. 889.

Lucaya gen. nov. p. 83 type *L. zingaro* sp. nov. Green Cay, Bahamas, p. 84 figd., **Böhlke (4)**.

Omobranchus kallosoma recorded from Aldabra, **Smith, J. L. B. (4)**.

Parablennius Ribeiro, validity, **Pinto (2)**.

Parembelmaria erythropros Fowler a synonym of *Acanthemblemaria aspera* (Longley), **Böhlke (2)**.

Petroscirtes mitratus recorded from Aldabra, **Smith, J. L. B. (4)**; *P. rhynchus* new Bornean record, **Inger**.

Pseudoblennius Jenkins and Evermann a synonym of *Emblemaria* Jordan and Gilbert, **Böhlke (2)**.

Salarias chiliensis Clark a synonym of *Homesthes biocellatus*, **Cohen**; *S. cyanostigma*, *S. fasciatus*, *S. guttatus* new Bornean records, **Inger**; *S. gibbifrons* recorded from W. Indian Ocean, **Smith, J. L. B. (4)**; *S. petersoni* Fowler a synonym of *Scartichthys gigas*, **Cohen**.

Scartichthys eques Steindachner a synonym of *S. gigas*, **Cohen**.

ANARRHICHADIDAE

Anarrhichas lupus from Long Island Sound, **Morrow (1)**; increase in numbers, **Barsukov (1)**; *A. lupus lupus*, *A. l. maris-albi* compared, **Barsukov (2)**; *A. lupus*, *A. minor*, *A. latifrons* distribution in Barents Sea, **Barsukov (3)**.

CLINIDAE

Labrisomus trinidadensis sp. nov. Trindade Isl., Brazil, **Pinto (1)** p. 1 figd.

Malacotenus key to Puerto Rican species, **Smith, C. L.**; *M. aurolineatus* p. 2 figd., *M. erdmanni* p. 8 figd. spp. nov. Puerto Rico, **Smith, C. L.**

Petraites roseus new Queensland record, **Marshall, T. C.**

STICHAEIDAE

Stichaeus grigorjewi structure of pituitary, **Honma (1)**.

PHOLIDIDAE

Pholis gunnellus northern extension of range, **Gordon & Backus**.

LUMPENIDAE

Lumpenus fabricii first record from Labrador, **Gordon & Backus**; *L. lumpretaeformis* northern extension of range, **Gordon & Backus**.

ZOARCIDAE

Lycodonus dorsoscutatus sp. nov. Kamo, Japan, **Oshima (1)** p. 7 figs.

Lycogramma japonica sp. nov. Japan, **Oshima (1)** p. 7.

OPHIDIIOIDEA

Larval and juvenile forms from the Mediterranean, **Padoa & others**.

BROTULIDAE

Barathrites key to three N. Atlantic species, **Nybelin**; *B. parri* sp. nov. N. Atlantic, **Nybelin** p. 283 figd.

Barathronus erikssoni sp. nov. North Atlantic, **Nybelin** p. 308 figd.

Bassogigas (*Holcomycteronus*) *koefoedi* Nybelin a synonym of *Grimaldichthys squamosus*, **Nybelin**.

Brosomphycis marginata Californian records, **Best (1)**.

Brotula barbata from Puerto Rico, **Erdman**; *B. multibarbata* recorded from Aldabra, **Smith, J. L. B. (4)**.

Dinematichthys cayorum from Puerto Rico, **Erdmann**; *D. ilucoeteoides* new Bornean record, **Inger**; recorded from W. Indian Ocean, **Smith, J. L. B. (4)**.

Grimaldichthys a synonym of *Bassogigas*, **Nybelin**.

Holcomycteronus a synonym of *Bassogigas*, **Nybelin**.

Lamprogrammus key to species, **Nybelin**.

Lerucoschlamys jonassoni sp. nov. North Atlantic, **Nybelin** p. 311 figd.

Parabassogigas gen. nov. type *Bassogigas grandis* (Gunther), **Nybelin** p. 298.

Petrotyx sanguineus from Puerto Rico, **Erdman**.

Porogadus abyssalis sp. nov. N. Atlantic, **Nybelin** p. 288 figd.

Sciadonius kullenbergi sp. nov. North Atlantic, **Nybelin** p. 310 figd.

Stygnobrotula gen. nov. p. 1 type *S. latebricola* sp. nov. Green Cay, Bahamas, p. 2 figd., Böhlke (1).

OPHIDIIDAE

Lepophidium profundarum from Puerto Rico, Erdman.

Otophidium grayi a valid species, Robins (1); *O. welski* taken off Massachusetts, Mather & Gibbs; from Atlantic coast of Georgia, Caldwell & Briggs.

†*Otolithus (Ophidiidarum) productus* sp. nov. London Clay Bognor p. 27 pl. ii fig. 19; *Ot. (O.) sheppeyensis*, *Ot. (O.) symmetricus* figd., Stinton (1).

CARAPIDAE

Carapus acus, *C. cuspis*, *Echiodon dentatus* nomenclature, Arnold.

Jordanicus texiguus sp. nov. otolith figd. Miocene New Zealand, Stinton (2) p. 516 pl. xxxii fig. 9; *J. gracilis* recorded from Aldabra, Smith, J. L. B. (4).

Onuxodon parvibrachium recorded from Aldabra, Smith, J. L. B. (4).

STROMATEOIDEA

Larval and juvenile forms from the Mediterranean, Padoa & others.

NOMEIDAE

Cubiceps gracilis juvenile recorded from Bonin Isl., Abe (2); *C. ismaelensis* from Algerian coast, Dieuzeide & Roland (2).

Palinurichthys bythites extension of depth range, Caldwell & Briggs.

Psenes cyanophrys bionomics, Le-gaspi; from Puerto Rico, Erdman; *P. indicus* recorded from Aldabra, Smith, J. L. B. (2).

TETRAGONURIDAE

Tetragonurus cuvieri juvenile taken off Bonin Isl., Abe (2); 146 specimens taken south of Aleutian Isl., Tanonaka.

ANABANTOIDEA

ANABANTIDAE

Histology of endocrine organs detailed study of reproductive and related behaviour, Forselius.

Colisa labiosa carcinoma of skin, Stolk (4).

Helostoma temminckii, main, accessory and emergency sources of food, Vaas.

Macropodus opercularis, colour-photo, breeding, Pinter.

Trichogaster trichopterus siamensis, Klauswitz (9); *T. trichopterus*, "*T. t. sumatranus*" not a subspecies but a colour-variety, Ladiges.

OPHICEPHALOIDEA

OPHICEPHALIDAE

Structure of scales, Bhatti & Aminul Huq.

Opficephalus introduction in Japan, Okada; anatomy of swim bladder, George; *O. punctatus* afferent branchials, Bhuiya & Siddiqui.

PHALLOSTETHOIDEA

PHALLOSTETHIDAE

Neostethus post larvae descr. and figd. from Luzon, Blanco & Villadolid.

MUGILOIDEA

Larval and juvenile forms from the Mediterranean, Padoa & others.

SPHYRAENIDAE

Sphyræna akerstromi recorded from Queensland, Marshall, T. C.; *S. barracuda*, *S. jello*, *S. flavicauda*, *S. toxema* recorded from Aldabra, Smith, J. L. B. (2); *S. borealis* adult taken off New England, Mather & Gibbs; *S. aff. †malembeensis* figd. from Miocene Île du Prince, Henriques da Silva.

MUGILIDAE

Key to Adriatic species; age and growth study, Morovic.

Feeding habits; dentition, with special reference to taxonomy, Ebeling.

Agonostomus monticola in Louisiana, Suttkus (2).

Crenimugil crenilabis recorded from Aldabra, Smith, J. L. B. (2).

Liza macrolepis recorded from Aldabra, Smith, J. L. B. (2).

Mugil auratus now introduced into Caspian Sea, Zenkevitch; *M. cephalus* from Oklahoma and northern Texas, Riggs; observations on schooling, Springer, S. (2); *M. diadema* new

Queensland record, **Marshall, T. C.**; *M. †flatus* sp. nov. L. Miocene Caucasus, **Svichenskaya** p. 61; *M. saliens*, *M. auratus*, *M. cephalus* phylogenetic relationship, **Burdak**; *M. †voesendorffensis* sp. nov. otoliths Pannonian Vienna Basin, **Papp & Thenius** p. 34 pl. vi figs. 37, 38.

Plicomugil labiosus first W. Indian Ocean record, **Smith, J. L. B.** (2).

Valamugil buchanani, *V. vaigiensis*, recorded from Aldabra, **Smith, J. L. B.** (2).

ATHERINIDAE

Natural hybrids, **Slastenenko**.

Atherina presbyter Dutch coast, **Kristensen**.

Basilichthys bonariensis structure of alimentary canal, **Carlo & Lopez**.

Hepsetia pinguis recorded from Aldabra, **Smith, J. L. B.** (2).

POLYNEMOIDEA

POLYNEMIDAE

Eleutheronema tetradactylum chondrocranium, **Marathe & Bal**.

Polydactylus plebeius recorded from Aldabra, **Smith, J. L. B.** (2).

SCLEROPAREI

Larval and juvenile forms from the Mediterranean, **Padoa & others**.

SCORPAENOIDEA

SCORPAENIDAE

Key to genera and species of W. Indian Ocean, **Smith, J. L. B.** (9) & (10).

Amblyapistus taenianotus new Bornean record, **Inger**.

Dendrochirus, *Pterois* key to species, **Klausewitz** (6).

Dendroscorpaena gen. nov. type *Scorpaena cirrhosa* (Thunberg), **Smith, J. L. B.** (9) p. 60; *D. gilchristi* sp. nov. off the Tugela river, **Smith, J. L. B.** (9) p. 62 figd.

Helicolenus lahillei Norman a synonym of *H. maculatus* Cuvier, **Smith, J. L. B.** (10).

Parabrachirus Matsubara a synonym of *Parapterois* Bleeker, **Smith, J. L. B.** (10).

Parascorpaena maculipinnis sp. nov. Bazaruto, Indian Ocean, **Smith, J. L. B.** (9) p. 57 figd.

Parascorpaenodes hirsutus gen. et sp. nov. Pinda, **Smith, J. L. B.** (9) p. 63 figd.

Pterois lunulata Schlegel a synonym of *P. russellii* Bennett, **Smith, J. L. B.** (10); *P. miles* Bennett a synonym of *P. volitans*, **Smith, J. L. B.** (10).

Pteropterus mombasae sp. nov. Mom-basa, **Smith, J. L. B.** (10) p. 80 figd.

Scorpaenodes caribbaeus new Florida record, **Robins** (1); *S. corallinus* Baixo Pinda, W. Indian Ocean p. 64 figd., *S. varipinnis* Zanzibar p. 65 figd., spp. nov., **Smith, J. L. B.** (9); *S. guamensis* new Bornean record, **Inger**.

Scorpaenopsis gibbosus new Bornean record, **Inger**.

Sebastes distribution, **Baranenkova**; food of in S.E. Greenland area, **Magnússon** (3); *S. marinus* description of larvae from Baie-des-Chaleurs, **Jean**; structure of urogenital system and reproductive cycle in ♂ and ♀; deposition of spermatozoa within ovary, **Magnusson** (1); structure of retina, **Wunder**; *S. stoliczkae* new Bornean record, **Inger**.

TRIGLIDAE

Paraheminodus gen. nov. type *Satyrichthys laticephalus* Kamohara, **Kamohara** (2) p. 4.

Peristethion cataphractum description of eggs, **Thomopoulos** (1).

Prionotus punctatus northern extension of range, **Caldwell & Briggs**.

SYNANCEJIDAE

Synanceja verrucosa account of two fatalities from stabs, **Smith, J. L. B.** (8); description of venom apparatus and its effects, **Gail & Rageau**.

PLATYCEPHALIDAE

Thysanophrys cirronasus new Queensland record, **Marshall, T. C.**

COTTIDAE

Cottopsis parvus Girard synonymous with *Cottus asper*, **Robins & Miller**.

Cottus key to Californian species, **Robins & Miller**; *C. aleuticus* aggregational behaviour, **Greenbank**; *C. bubalis* reproduction and embryonic development, **Thomopoulos & Bauchot**; *C. gobio* bionomics, **Smyly**; *C. macrops* Rutter a synonym of *C. klamanthensis*, **Robins & Miller**; *C. perplexus* Gilbert & Evermann a valid species, **Robins & Miller**; *C. poecilopus* in Finland, **Koli**; *C. protrusus* Schultz & Spoor a synonym of *C. aleuticus*, **Robins & Miller**; *C. shasta* synonymous with *C. gulosus*, **Robins & Miller**.

Enophrys dicerca recorded from arctic Alaskan waters, **Mohr, Wilimovsky & Dawson**.

Scorpaenichthys marmoratus avoidance of eggs by predators, **Pillsbury**.

Zesticelus japonicus sp. nov. Niigata, Japan, **Oshima** (1) p. 2 figd.

COMEPHORIDAE

Ecological adaptations in reproductive behaviour, **Koryakov**.

CYCLOPTERIDAE

Cyclopterois inarmatus sp. nov. Bering Sea, **Mednikov & Prokhorov** p. 717 figd.

Lethotremus fuscopunctatus sp. nov. Japan, **Oshima** (1) p. 4 figd.

LIPARIDAE

Crystallias kamoae sp. nov. Kamo, Japan, **Oshima** (1) p. 5 figd.

Liparis frenatus recorded from Nabuto, Japan, **Kuroda** (3).

DACTYLOPTEROIDEA

Larval and juvenile forms from the Mediterranean, **Padoa & others**.

THORACOSTEI

GASTEROSTEIDAE

Gasterosteus aculeatus breeding colouration of female, **Drapkin**; *G. aculeatus* × *Pygosteus pungitius* hybrids, **Leiner**.

HETEROSOMATA

Importance of lateral body orientation, **Aleev** (2).

Larval and juvenile forms from the Mediterranean, **Padoa & others**.

BOTHIDAE

Natural hybrids, **Slattenenko**.
Bothus pantherinus new Bornean record, **Inger**.

PLEURONECTIDAE

Natural hybrids, **Slattenenko**.

Clidoderma asperrimum new record from British Columbia, **Welander, Alverson & Bergman**.

Eopsetta jordani movements of spawning population, **Alverson, D. L. & Chatwin**.

Hippoglossoides platessoides breeding and fecundity, **Bagenal** (1).

Pleuronectes platessa structure of asymmetrical head, **Blok**; German Bight population study, **Kotthaus**; food of larvae, **Shelbourne**.

Reinhardtius hippoglossoides first record from Labrador, **Gordon & Backus**.

SOLEIDAE

Gymnachirus williamsoni recorded from Atlantic; compared with *G. texae*, **Caldwell & Briggs**.

Pardachirus pavoninus new Bornean record, **Inger**.

Solea humilis post-larvae descr. and figd. from Luzon, **Blanco & Villadolid**; *S. lascaris* description of eggs, **Thomopoulos** (1).

Synaptura selheimi from North Queensland, **Marshall, T. C.**

DISCOCEPHALI

Larval and juvenile forms from the Mediterranean, **Padoa & others**.

ECHENEIDAE

Echeneis naucrates recorded from Aldabra, **Smith, J. L. B.** (4).

Remora albescentis recorded from Aldabra, **Smith, J. L. B.** (4); *R. remora* notes on respiration, **Strasburg**; *R. remora*, *Rhombochirus osteochir* from Puerto Rico, **Erdman**.

Remoropsis pallidus new Australian record, **Haysom**.

Rhombochirus osteochir new Australian record, **Marshall, T. C.**

PLECTOGNATHI

Larval and juvenile forms from Mediterranean, Tortonese in Padoa & others.

BALISTOIDEA

BALISTIDAE

Balistapus verrucosus new Bornean record, Inger.

Balistes caprisus from Puerto Rico, Erdman; skull, Garnaud (1).

Canthidermis sobaco from Puerto Rico, Erdman.

MONACANTHIDAE

Alutera schoepfi, *A. punctata* from Puerto Rico, Erdman.

Amanses pardalis recorded from Nabuto, Japan, Kuroda (3).

Cantherines pardalis new Bornean record, Inger.

Monacanthus cirrhifer effect of testosterone on dorsal fin, Ishii & Egami; *M. tuckeri* recorded from Florida, Robins (1).

Pervagor scanleni sp. nov. S. Africa, Smith, J. L. B. (14) p. 221 figd.

OSTRACIANTIDAE

Rhinesomus gibbosus new Australian record, Marshall, T. C.

TETRAODONTOIDEA

TETRAODONTIDAE

Arothron nigropunctatus new Bornean record, Inger.

Canthigaster rostratus recorded from Florida, Robins (1).

Carinotetraodon chlupatyi gen. et sp. nov. Thailand, Benl (2) p. 1 figd.

Sphaeroides halsteadii sp. nov. N.S.W., Whitley (2) p. 70 figd.

Tetraodon leiurus brevirostris subsp. nov. ? Siam, Benl (1) p. 63 figd.; *T. ocellaris* sp. nov. Thailand, Klausewitz (9) p. 201 figd.; *T. somphongsi* sp. nov. Thailand, Klausewitz (10) p. 205 figd., Klausewitz (3).

DIODONTIDAE

Chilomycterus antillarum recorded from Florida, Robins (1).

Diodon bleekeri post larvae descr. and figd. from Luzon, Blanco & Villadolid; *D. holacanthus* new Bornean record, Inger; *D. hystrix* spawning in captivity, Wolfsheimer.

Lophodiodon nigropunctatus sp. nov. S. Africa, Smith, J. L. B. (14) p. 222 figd.

MOLIDAE

Mola mola, Aramburu (2); occurrence in Texas waters, Kemp; *M. ramsayi* description of Chilean specimens, Buen (2).

XENOPTERYGII

Larval and juvenile forms from the Mediterranean, Padoa & others.

GOBIESOCIDAE

Key to genera of Lepadogastrinae, Briggs.

Acyrtops beryllinus from Puerto Rico, Erdman.

Arcos macrophthalmus from Puerto Rico, Erdman.

Gobiesox nigripinnis, *G. strumosus* from Puerto Rico, Erdman.

Lecanogaster gen. nov. p. 204 type *L. chrysea* sp. nov. Gold Coast, p. 205 figd., Briggs.

Lepadogaster l. lepadogaster, *L. l. purpurea* geographical range, Briggs.

Opeatogenys cadenati sp. nov. Senegal' French W. Africa, Briggs p. 206 figd.

Sicyases sanguineus results of electrocardiogram, Concha & Vargas; structure of adrenals, Vargas & Concha (1).

Tomicodon fasciatus from Puerto Rico, Erdman.

HAPODOCI

BATRACHOIDIDAE

Porichthys myriaster luminescence and innervation of photophores, Nicol.

PEDICULATI

Larval and juvenile forms from the Mediterranean, Padoa & others.

ANTENNARIOIDEA

ANTENNARIIDAE

Key to genera and species, **Schultz (2)**.

Ab antennarius gen. nov. type *Antennarius duescus* Snyder, **Schultz (2)** p. 66 figd.; *A. analis* sp. nov. Hawaii, **Gosline** in **Schultz (2)** p. 67 figd.

Antennarius (Plumantennatus) subgen. nov. type *Antennarius asper* Macleay, **Schultz (2)** p. 89 figd.; *A. bermudensis* p. 98 figd., Bermuda, *A. pauciradiatus* p. 100 figd., Florida, spp. nov., **Schultz (2)**; *A. fuliginosus* sp. nov. S. Africa, **Smith, J. L. B. (14)** p. 222 figd.

Antennatus gen. et subgen. nov. type *A. strigatus* Gill, **Schultz (2)** p. 80 figd.; *A. (Xenophrynichthys)* subgen. nov. type *Antennarius cryptacanthus* Weber, **Schultz (2)** p. 81 figd.

Golem gen. nov. type *Antennarius cryptacanthus* Weber, **Whitley (2)** p. 70.

Kanazawaichthys gen. nov. p. 62 type *K. scutatus* sp. nov. p. 63 figd., Gulf of Mexico, **Schultz (2)**.

Lophiocharon (Uniantennatus) subgen. nov. type *Antennarius horridus* Bleeker, **Schultz (2)** p. 83 figd.; *L. tenebrosus* new Florida record, **Robins (1)**.

Nudiantennarius gen. nov. type *Antennarius subteres* Smith & Radcliffe, **Schultz (2)** p. 66 figd.

Phrynelox (Triantennatus) subgen. nov. p. 74 type. *Antennarius zebrinus* sp. nov. p. 75 figd. N.S.W., **Schultz (2)**; *P. (Triantennatus) atra* sp. nov. N.S.W., **Schultz (2)** p. 76 figd.

Plumantennatus subgen. nov. of *Antennarius* q.v.

Triantennatus subgen. nov. of *Phrynelox* q.v.

Uniantennatus subgen. nov. of *Lophiocharon* q.v.

Xenophrynichthys subgen. nov. of *Antennatus* q.v.

OGCOCEPHALIDAE

Ogcocephalus parvus from Puerto Rico, **Erdman**.

CERATIOIDEA

ONEIRODIDAE

Oneirodes bradburyae sp. nov. Gulf of Mexico, **Grey** p. 245 figd.

CERATIIDAE

Cryptopsaras couesii from Monterey Bay, first Californian record, described and figd., **Fast**.

OPISTHOMI

MASTACEMBELIDAE

Mastacembelus armatus secretory cells of gill filaments, **Kapoor, B. G. (1)**.

CROSSOPTERYGII

Derivation of first tetrapods, **Jarvik**.

†RHIPIDISTIA

Laccognathus, *Glyptolepis* and *Holoptychius* remains descr. and figd. from Eseuminae Bay, **Ørvig (1)**.

Litoptychus and *Onychodus* remains figd. and referred to Holoptychiidae, **Ørvig (1)**.

Onychodus and *Hamodus* spiral teeth figd., **Gross**.

HOLOPTYCHIIDAE

Hamodus lutkevitschi figd., **Obruchev (1)**.

Holoptychius sp. figd., **Obruchev (1)**.

RHIZODONTIDAE

Eusthenopteron wenjukowi figd., **Obruchev (1)**.

Strepsodus siberiacus scale figd., **Khabakov (1)**.

OSTEOLEPIDAE

Porolepis scales descr. and figd. from Spitsbergen, **Ørvig (1)**; *P. uralensis* figd., **Obruchev (1)**.

ACTINISTIA

COELACANTHIDAE

Latimeria chalumnae comparison of known specimens, **Schindler (1)**; nucleic acids, **Vialli**.

†*Rhabdoderma ? aegyptiaca* L. Carboniferous Egypt, **Heide** p. 74 pl. xvii fig. 28.

DIPNOI

Evolution, **Lehman** (1).

Palaeogeographic importance, **Pidoplichko & Kurazhskovski**.

†DIPTERIDAE

Dipterus serratus figd., **Obruchev** (1).

LEPIDOSIRENIDAE

Protopterus bionomics, **Chopard**; comparative morphology of mid-brain, **Dorn**; *P. dolloi* reproduction, **Brien, Poll & Bouillon**.

CERATODONTIDAE

†*Ceratodus minor* p. 310 pl. i fig. 1; *C. youngi* p. 310 pl. i fig. 2, spp. nov. Jurassic Szechuan, China, **Liu & Yeh**.

Epiceratodus Teller a synonym of *Neoceratodus* Castelnau, **Miller, R. R.** (1).

Neoceratodus forsteri (Krefft) correct name for Australian lungfish, **Miller, R. R.** (1).

ERRATA

PISCES

Vol. 92.

p. 89. Under Gobiidae: *Croila* should read *Croilia*.

Vol. 93.

p. 16. Under Geiger, W. insert "27:" after "and" in the fifth line.

p. 22. Under Illick, H. J., last line: "36" should read "56".

p. 23. Under Jordan & Evermann Bull. U.S. Fish. Comm. 22: in fourth line delete "1904" and substitute "1902 (1903)".

p. 66. Under †Osteostraci. The first two entries should read: "Nature of electric or sensory organs, **Bohlin; Cory**. *Kolymaspis* gen. nov. type *K. sibirica* sp. nov.;"

p. 67. Under Selachii. *Cooperodon* should be preceded by "†".